

REPORT

OF THE

HEALTH OF LIVERPOOL

DURING THE YEAR 1864,

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LIVERPOOL:

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ANNUAL REPORT.

THE sickness which in my last Annual Report I described as characterising the years 1862 and 1863, continued without intermission during the whole period of 1864, when the deaths registered in the Borough of Liverpool amounted to 16,836, or to 1,626 above the corrected average of the preceding ten years, making its death rate equal to 36 in every 1,000 of the inhabitants ; that of the Parish being 39·4, and of the out Townships 30·9, in the 1,000.

Many classes of diseases combined to cause this high mortality, but the most important were the zymotics and pulmonary complaints.

ZYMOTICS.

The zymotics account for 4,870, or 28·9 per cent of the deaths from all causes, an excess numerically greater than had occurred in any year since the passing of the Sanitary Bill, with the exception of 1847, the year of the Irish fever, and 1849, the year of the Asiatic cholera. But, considered relatively to other diseases, the influence of the zymotics was more marked not only in 1847 and 1849, but also in 1854, when cholera again became epidemic ; in 1858, when scarlatina extensively prevailed ; and lastly, in 1863, when both scarlatina and typhus were largely predominant.

The following table illustrates the quarterly mortality of the principal zymotics during the year 1864:—

DISEASES.	March Quarter.	June Quarter.	September Quarter.	December Quarter.	Total.
Total zymotics	1014	895	1513	1448	4870
Small pox	59	111	114	198	482
Measles	139	99	47	83	368
Scarlatina	90	50	85	124	349
Hooping cough.....	212	81	40	37	370
Diarrhœa	57	83	601	106	847
Typhus and infantile remittent.....	307	339	395	733	1774

TYPHUS.

The most fatal of the zymotics was typhus. Under this term our nosology includes every variety of continued fever; but it seems pretty well agreed upon by the medical men of the town, and is consistent with my own observations, that the enteric form was not met with more frequently than usual, and that the prevailing type was a pure typhus, with a distinct mulberry-coloured rash. There will, no doubt, be shades of difference in the opinion of practitioners as to the extent of any ruling disease, according to the locality where, the time when, and the patients among whom, the observations are made. Thus, seven gentlemen of considerable experience as Parochial Medical Officers having been questioned by me on this subject, four stated the predominant fever to be "typhus," two included "typhoid with typhus," and one mentioned that the majority of cases which he had seen were "low typhoid." Infantile remittent is purposely placed in the same category with typhus, because considered by many physicians as not only similar in its etiology, but also as the one disease with modified symptoms. It may be mentioned, however, as shown in the chart of the annual mortality, that it numbered 34 entries on the registry.

Typhus fever began to be in excess in Liverpool during the latter months of 1861, and steadily increased until it assumed, during the last quarter of 1864, the gravity and extent of a destructive epidemic. Taking 1860, a period of average healthiness, as a basis, we find that the annual deaths from this disease rose from 390 consecutively in the three following years to 482, 730, and 1,304, while in 1864 they reached to 1,774.

The lists of admissions into the Fever Hospital of the Workhouse record the same history in the progress of the disease.

In 1860 the total cases under treatment were 618; the average number in hospital at one time, 22. In 1861 the total cases, 656; the average at one time, 29. In 1862 the total cases, 1,220; the average at one time, 52. In 1863 the total cases, 2,302; the average at one time, 132. In 1864 the total cases, 4,157; the average at one time, 209.

But a yearly average does not exemplify the extent of the fever among the people during the period of its epidemic virulence, and I therefore subjoin a record of the position of the hospital during the last 14 weeks of 1864:—

Admitted.	Discharged.	Died.	Remaining.
106	39	12	262
134	93	15	288
119	74	17	316
128	83	16	345
179	128	25	371
138	137	26	346

Admitted.	Discharged.	Died.	Remaining.
127	115	22	336
123	119	19	321
176	98	23	376
188	158	24	382
157	126	36	377
169	117	28	401
141	131	32	379
127	77	31	398

DEATH RATE OF TYPHUS.

It is difficult, perhaps impossible, to obtain sufficiently definite and comprehensive returns by which to calculate, with absolute accuracy, for the whole Borough the death rate of a disease; but the following facts seem to prove that the number of sick from typhus relatively to the death registry was much greater than in non-epidemic periods. The per centage mortality of typhus fever patients in the Parish Workhouse was 15·5, in the West Derby Union Hospital 15, in the Toxteth Fever Wards 20; but premising that these probably include, in many instances, the worst cases visited by some of the District Medical Officers, we find that the death rate among patients treated at their own houses varied considerably. Two of the District Medical Officers of the Parish estimate the death rate at a little more than 2 per cent; another (after excluding from the calculation cases of advanced life, viz., over 50 years of age) at 3 to 4 per cent.; four others at 6·6, 7, 7·5, and 10 per cent; while one practitioner places it as high as 14·7, another at 16·4, and another at 20 per cent. One gentleman informs me that he had not had a death from typhus during the year, either in his private practice or as District Medical Officer. The average mortality of typhus at different ages has been kindly forwarded to me from two sources.

1. Mr. Steele's return:—1st August to 30th November, 1864. Total cases, 153; and total number of deaths, 4.

Deaths.	Under 20 yrs.	20 to 40.	40 to 60.	Above 60.
Per centage rate of...	2·3	6·25	15·4	?

2. Dr. Shearer's return:—During 15 months, ending December 31st, 1864. Total cases, 610; and total number of deaths, 48.

Deaths.	Under 20 yrs.	20 to 40.	40 to 60.	Above 60.
Per centage rate of...	3·3	10	18·18	50

DEATH REGISTRY OF TYPHUS.

Referring to the death registry of typhus, we find that though the weekly lists occasionally gave fallacious indications of subsidence, yet the quarterly returns showed a steady increase, not only in the number of its victims but in the extent and range of its fatal prevalence. In the second of the following

tables the deaths which occurred in the Workhouse Hospital have been transferred to the Wards from whence the patients are said to have come. This is done advisedly, for the purpose of localising as far as possible the seats or origins of disease; but it must not be forgotten that tramps and vagrants will occasionally be credited to a district where they may only have stopped for a single night.

WEEKLY REGISTRY OF DEATHS FROM TYPHUS.

1st Quarter..	21	23	26	31	26	25	19	18	24	24	22	25	23	307
2nd „ ..	22	24	32	21	20	23	31	23	27	25	30	33	28	339
3rd „ ..	17	32	25	38	30	32	26	32	28	35	31	37	32	395
4th „ ..	48	48	44	53	54	56	54	55	77	60	56	63	65	733
														1774

DISTRIBUTION OF TYPHUS DEATHS.

Wards.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year.
Vauxhall.....	17	17	45	60	139
Scotland	74	75	105	201	455
St. Paul's	6	6	20	39	71
Exchange	26	11	18	35	90
St. Ann's.....	19	26	39	59	143
Lime	10	10	7	31	58
Castle	1	5	1	8	15
St. Peter's	5	6	4	3	18
Pitt	9	9	5	11	34
Gt. George.....	19	24	17	33	93
Rodney	11	3	3	20	37
Abercromby	5	19	6	35	65
Everton and Kirkdale	33	34	35	72	174
North Toxteth	23	21	17	21	82
South Toxteth	28	30	31	48	137
West Derby	15	28	22	28	93
Workhouse.....	1	..	1	5	7
Vagrant	3	5	1	8	17
Unknown	2	10	18	16	46
Total	397	339	395	733	1774

It will be necessary, however, in order accurately to estimate the position of the Toxteth Wards in reference to typhus, that a supplementary table be added showing the number of deaths of patients who, during the year, went from these districts to the Smithdown Fever Hospital, which, being beyond the parliamentary boundaries, is not included in the annual death registry of Liverpool.

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
North Toxteth	22	..	..	15	37
South Toxteth	60	..	..	29	89

Mr. Hagger, the Clerk of the Vestry, sends to my office weekly a list of houses from whence fever patients have been removed. This list included, within the fourteen weeks from the 1st October to December 31st, 1863, cases which I have arranged in Wards, in order to show, by comparison with the preceding table, the parallelism between sickness and death.

Wards.	Oct. 1st.	Oct. 8th.	Oct. 15th.	Oct. 22nd.	Oct. 29th.	Nov. 5th.	Nov. 12th.	Nov. 19th.	Nov. 26th.	Dec. 3rd.	Dec. 10th.	Dec. 17th.	Dec. 24th.	Dec. 31st.	14 Weeks.
Scotland..	35	47	37	51	46	39	49	49	46	30	62	47	38	49	625
Vauxhall..	14	14	10	27	17	18	23	14	23	19	14	9	12	16	230
St. Paul's.	9	5	6	9	5	8	5	8	4	4	3	10	4	5	85
Exchange.	10	6	13	20	15	12	9	16	20	16	7	16	13	10	177
St. Ann's.	14	17	10	10	20	12	19	12	22	14	16	8	17	15	206
Lime	5	9	5	7	8	6	5	3	6	7	4	7	5	5	82
Castle....	2	2	1	1	3	5	1	0	0	7	0	1	2	1	26
St. Peter's	2	3	0	6	0	0	0	3	0	2	0	0	1	2	19
Pitt.....	2	2	5	5	4	1	5	5	3	1	5	6	7	3	54
Gt. George	4	1	6	4	1	8	5	1	5	7	3	3	4	1	53
Rodney ..	11	3	0	7	1	3	0	0	6	5	3	2	3	4	48
Ab'rcromby	..	2	4	9	6	1	6	6	8	7	10	7	7	5	78
Total ..	108	111	97	156	126	113	127	111	143	119	127	116	113	116	1683

The classification into Wards of all the deaths occasioned by a zymotic disease, due more or less to removable causes, will not, however, enable us to arrive at any very definite idea of the nature of sanitary evils; for a district may be, as a whole, open and salubrious, and yet possess two or three nooks from which the death-bearing miasm is never absent. It is thus in reference to typhus fever with Abercromby Ward and the Toxteths. In order, therefore, to localise more precisely the habitats of typhus, I give a list of streets where three or more deaths have occurred from that disease during the year 1864.

A LIST OF STREETS IN WHICH THREE OR MORE DEATHS FROM TYPHUS
HAVE OCCURRED DURING THE YEAR 1864.

STREETS.	HOUSES.		Total.		STREETS.	HOUSES.		Total.
	Front.	Court.				Front.	Court.	
Ivy	2	1	3		Henry Edward	2	1	3
Wellington	2	1	3		Mansfield.....	1	2	3
Tatlock.....	2	1	3		Devon	1	2	3
Grosvenor	1	2	3		Mill Street East	3	0	3
Ennerdale	1	2	3		Lambert	1	2	3
Back Bond	3	0	3		Clifford.....	1	2	3
Calvin	3	0	3		Hunter.....	1	2	3
Clement	1	2	3		Baptist.....	2	1	3
Belle.....	3	0	3		Great Richmond.....	2	1	3
McKee	2	1	3		Hotham	3	0	3
Arley.....	2	1	3		Copperas Hill	3	0	3
Stockdale	1	2	3		Jordan	3	0	3
Lace	1	2	3		St. James	3	0	3
Pall Mall	2	1	3		Bailey	3	0	3
Byrom	2	1	3		Gilbert	1	2	3

STREETS.	HOUSES.		Total	STREETS.	HOUSES.		Total.
	Front.	Court.			Front.	Court.	
Upper Pitt	3	0	3	Pitt	4	0	4
Lydia Ann	3	0	3	Crosbie	0	4	4
Frederick	3	0	3	Simpson	3	1	4
Brick	3	0	3	Edward	4	0	4
Renshaw	2	1	3	Henderson St., T. Park	0	4	4
Jervis	2	1	3	Mill	4	0	4
Warren	3	0	3	Ashton	1	3	4
Roscoe Lane	2	1	3	Robertson	4	0	4
Pembroke	1	2	3	Great Howard	3	2	5
Brownlow Hill	3	0	3	Barmouth	5	0	5
Lancaster	3	0	3	Great Oxford	4	1	5
Earl	2	1	3	Sherwood	4	1	5
Netherfield Road North..	3	0	3	Athol	5	0	5
Prince Edwin Lane	3	0	3	Gildart's Gardens	1	4	5
Duke Street, Everton....	3	0	3	Standish	4	1	5
Elias	3	0	3	Drinkwater's Gardens ..	5	0	5
Smithdown Lane	2	1	3	Christian	4	1	5
Falkner	1	2	3	Spitalfields	1	4	5
Mason	0	3	3	Bridgewater	3	2	5
Wright St., Toxteth Park	1	2	3	Kitchen	3	2	5
Wolfe	3	0	3	Sparling	1	4	5
Essex	3	0	3	Tarlton Street, Everton..	2	3	5
Eaton	0	3	3	Harding St., West Derby.	4	1	5
Anne	1	2	3	Stanhope St., T. Park ..	1	4	5
Clive	1	2	3	Borough's Gardens	0	6	6
Russell	1	2	3	Woodstock	4	2	6
Hughes	1	2	3	St. Martin	4	2	6
Northumberland	2	1	3	Upper Milk	3	3	6
Llewellyn	1	2	3	Trueman	6	0	6
Doncaster	4	0	4	Hare Place	1	5	6
Wright	2	2	4	Richmond Row	1	5	6
Carlton	2	2	4	Birkett	3	3	6
Maddox	3	1	4	Lower Myrtle	4	2	6
Horatio	0	4	4	New Hall	6	0	6
Virgil	3	1	4	Prince William, T. Park.	1	5	6
Portland	4	0	4	Epsom	7	0	7
Bond	2	2	4	Hedley	7	0	7
Eldon	2	2	4	Hopwood	3	4	7
Bevington	2	2	4	Tenterden	7	0	7
Titchfield	4	0	4	Rose Place	3	4	7
Saltney	0	4	4	Fontenoy	5	2	7
Paget	4	0	4	Marybone	7	0	7
Banastre	1	3	4	Smithfield	2	5	7
Blackstock	3	1	4	Johnson	6	1	7
Maguire	3	1	4	Circus	6	1	7
Vernon	1	3	4	Crump	0	7	7
Great Crosshall	4	0	4	Duckinfield	1	6	7
North	3	1	4	Dryden	2	6	8
Webster	4	0	4	Raymond	5	3	8
Marlborough	2	2	4	Limekiln Lane	4	4	8
Highfield	4	0	4	Beau	3	5	8
St. Anne	2	2	4	Midghall	4	4	8
Gay	3	1	4	Gerard	8	0	8
Thurlow	0	4	4	Ben Jonson	5	3	8
Soho	4	0	4	Robert Street, T. Park ..	4	4	8
Finch	1	3	4	Vauxhall Road	7	2	9
Lionel	4	0	4	Paul	2	7	9
Torbock	3	1	4	Gascoyno	5	4	9
Oakes	0	4	4	Milton	4	5	9
Preston	3	1	4	Hodson	3	6	9
Shaw's Alley	4	0	4	Adlington	3	6	9

STREETS.	HOUSES.		Total.	STREETS.	HOUSES.		Total.
	Front.	Court.			Front.	Court.	
Comus	3	6	9	Burlington	6	7	13
Clayton	5	4	9	Norfolk	11	2	13
Gore Street, T. Park	3	6	9	Albert Street, T. Park ..	4	9	13
Chisenhale	1	9	10	Collingwood, " ..	5	9	14
Cazneau	4	6	10	Bostock	10	4	14
Cavendish	4	6	10	Mann Street, T. Park ..	7	7	14
Sawney-pope	9	1	10	Combermere	2	12	14
Oriel	2	8	10	Blenheim	3	13	16
Westmoreland	10	0	10	Newsham	5	11	16
Grenville	4	7	11	Hornby	9	8	17
Naylor	2	9	11	Upper Frederick	8	10	18
Addison	6	5	11	St. Andrew	1	17	18
Scotland Road	8	4	12	Back Portland	14	5	19
Leeds	6	6	12	Kew	18	6	24
Bedford Street, T. Park ..	11	1	12				

A LIST OF STREETS IN WHICH ONLY TWO DEATHS FROM FEVER HAVE OCCURRED,
BUT BOTH OF THEM EITHER IN THE SAME HOUSE OR COURT.

Prussia Street	2 deaths in No. 5 Court.
Norris Street	2 " " 26, Front House.
Whitley Street	2 " " 5 Court.
Queen Street	2 " " 3 Court.
Cuerdon Street	2 " " 52, Front House.
Jenkinson Street	2 " " 11 Court.
Cross Street	2 " " 1, Front House.
Pickop Street	2 " " 1 Court.
Carpenter's Row	2 " " 7, Front House.
Palm Street	2 " " 1 Court.
Anthony Street	2 " " 62, Front House.
Walker Street, West Derby	2 " " 1, Front House.
Carleton Street, Toxteth Park	2 " " 11, Front House.

THE ETIOLOGY OF EPIDEMIC TYPHUS.

Typhus fever is never altogether absent from Liverpool: but we find that in a non-epidemic year, such as 1860, its death rate relatively to diseases from all causes is about 3 per cent. In 1862, however, it accounted for 5·2; in 1863, for 7·6, and in 1864, for 10·5 per cent of all deaths. This excess, continuous and persistent for three years, became very great in the autumn of 1864; and I purpose to inquire into the nature of those special causes which encouraged it to spread beyond what may be termed its normal range. Having been called upon in November to address to the Mayor an official report on this subject, I requested seven of the most experienced District Medical Officers of the Parish to favour me with the results of their practical experience and observation. In their replies, the chief agencies are stated to have been con-

tagion, poverty, overcrowding, and filth. One gentleman thus wrote:—"The physical conditions to which it chiefly owes its prevalence, I believe to be the overcrowded and vitally depressed condition of large numbers of persons from improper or insufficiently nutritious food, the non-observance of Hygienic laws, and the ordinary concomitants of pauperism." Another attributes it to overcrowding and the dirty habits of the people, and adds that "it is most prevalent among the very poor." The third states that "in connexion with poverty, filth, overcrowding, &c., the element of contagion must always be kept in view." The fourth says:—"I am of opinion that it owes its prevalence in a great measure to poverty, bad ventilation, and filth." The fifth points to overcrowding as a cause, and to its being most prevalent "among females" and "the class belonging to tramps and destitute." The sixth ascribes it to "overcrowding of houses and breathing an impure atmosphere, and to the great number of open petties and middens." The last gentleman places its cause "chiefly to contagion and overcrowding, and inability by persuasion to get them (the patients) to go to the hospital."

CONTAGION.*

There is no doubt that the contagion of typhus varies so far in different seasons that sometimes a fever, though of peculiar malignancy, is kept in abeyance or confined within a very limited circle; while at other times, though of a milder type, it spreads rapidly among large sections of the people. This difference is not always dependent on any apparent physical peculiarities of the place or person attacked; but may be due, *firstly*, to that remarkable characteristic of the disease, the comparative immunity of an individual from a second attack, by which the numbers of the unprotected are at certain periods greater than others; and, *secondly*, to those occult qualities of the air which Sydenham designated by the now familiar term "epidemic constitution." If the dispersion of the fever, due as it is to the quickened action of contagion, had been general among all ranks in an equal or even proximate degree, as is seen to be the case occasionally in epidemic scarlatina, there would have been found in these two theories a rational solution of the phenomenon. But though the area over which it spread was large, embracing streets and courts in every ward of the borough, yet, true to the characteristics of its natural history, it was chiefly found in those places where the people were weakened by indigence, emanations from filth, or the mephitic gases of overcrowded rooms and houses.†

* It has always appeared to me tautological to apply the term "cause" to what is an inseparable accident or quality of the disease, for we cannot conceive the existence of typhus without the presence of its contagion.

† "That the destitution and irregular mode of life, connected with the destitution of many of the lower ranks in this, as in others of the great towns in Scotland, are the chief cause of the frequent diffusion of epidemic fever in them; and that this is not merely owing to the filth which is always found in connexion with such a mode of life, I conclude from the following considerations:—

Accepting, then, as ultimate facts, that typhus spreads by contagion, and that the rapidity and activity of the contagion was promoted to a certain degree by atmospherical influence, we have still to determine what were the moral and physical adjuncts which, by increasing the susceptibility of the people, are truly the causes of the epidemic.

INDIGENCE.

"Little is known," says the Registrar-General, "of the immediate chemical or vital causes of epidemics; but in given circumstances, where many are immersed in an atmosphere of decaying organic matter, some zymotic disease is invariably produced. Where there is *starvation* it is most frequently typhus; *cold*, influenza; *heat*, cholera, yellow fever, plague." "*Typhus*," says Professor Christison, "*puts on the epidemic shape only at periods of want among the labouring classes.*" In these two extracts are contained axiomatic truths, based on the experience of physicians, and confirmed by the whole history of medicine. Nor is there any ground for believing that the present epidemic of typhus forms an exception to the general rule. On the contrary, it may, *prima facie*, be surmised that a fever which began to be in excess during a period of commercial and manufacturing embarrassment, affecting to a large extent the consumption of the most considerable of the staple commodities of the world, and thereby throwing out of employment vast bodies of the working classes, was in some way connected with want; while a disease whose victims are generally the heads of families, would itself continue to spread that distress over an ever-increasing surface of the population. The epidemic is said to have originated in the autumn of 1861, because from that period the deaths from it have been in permanent excess. In the summer quarter of 1861 they amounted to 93, which is about the normal average in non-epidemic years. In the autumn quarter they rose to 142, or to 45 more than in the

"1st. It is a general principle in pathology, established by the general experience of medical men in all ages, in civil life as well as in military or naval service, that contagion, and indeed any other cause of acute disease, acts most rapidly and most certainly on the human body when enfeebled by deficient nourishment, by insufficient protection against cold, by mental depression, by occasional intemperance, and by crowding in small ill-aired rooms: all which are inevitable effects and concomitants of destitution in the poorest inhabitants of this and other great towns.

"2nd. It has been very generally observed, on a large scale, in the history of contagious fever, that it has spread most rapidly and extensively, and assumed the form of an epidemic, in circumstances where most or all these conditions have been present; for example, after scarcities, after the sudden cessation of the employment for numerous labourers, in exhausted, impoverished, beaten armies, besieged towns, &c.

"3rd. This has been especially the result of very numerous and careful observations made in Ireland on epidemic fevers, precisely similar to those lately prevalent in Scotland, and from which, in fact, very many of the cases occurring in Scotland during the present century have obviously originated. At this moment a large proportion of the cases of fever in the Infirmary here are Irish labourers and their families, who have irregular employment in the neighbourhood.

"The experience of the physicians in all parts of Ireland in the great epidemic which began in 1817 was collected and digested by the eminent men appointed by Government for that purpose, and commented on by others. The peculiar efficacy of want and misery in causing the extension of the disease seems to have been observed and admitted by every one of the practitioners, and confirmed by the inquiries of every one of the reporters to Government, and other authors who have written on that epidemic; and the only question on which these authors appear to differ is, as to whether want and misery are sufficient to engender the disease, or only give efficacy to the specific contagion.

Professor W. P. ALISON."

corresponding period of 1860. Since then the quarterly mortality stands as follows :—

		1st Qr.		2nd Qr.		3rd Qr.		4th Qr.		Total.
1862	...	138	...	133	...	149	...	310	...	730
1863	...	299	...	310	...	288	...	407	...	1304
1864	...	307	...	339	...	395	...	733	...	1774

In the summer of 1861—that is a few months before the accession of the epidemic—the blockade of the Southern States of America began seriously to lessen the quantity of cotton imported into Liverpool.

This is shown by the following comparative statement :—

Imports of cotton in	1860	...	...	...	...	3,169,669	bales.
„ „ „	1861	...	...	...	...	2,794,001	„
„ „ „	1862	...	...	...	...	1,253,881	„
„ „ „	1863	...	...	...	...	1,666,646	„
„ „ „	1864	...	...	...	...	2,247,755	„

The effect of this decrease of cotton imports in 1861, to the extent of 375,668 bales, was to throw out of employment a great number of cotton porters and lumpers, who at once either fell into pauperism or, by crowding into other departments of the unskilled labour market, helped to reduce to a minimum the earnings of their fellows. In order fully to realise the momentum and result of such derangement in the ordinary channels of industry, we must never forget, what is too well known to all who are interested in the social condition of the people, that in a town containing half a million of inhabitants there will be always between seventy to eighty thousand dependent on weekly wages sufficient only for the barest requirements of daily bread, and whose position is, therefore, sensibly affected by competition however slight, or by slackness in business however temporary.

We will first look to its effect on the pauper population. The returns of the parochial poor rate expenditure prove that a great number of the people did fall during 1861 into the ranks of pauperism. If we take the average of the nine years* from 1852 to 1860 inclusive, we find that the number of paupers in Liverpool Parish—that is of persons either within the walls of the Workhouse or receiving out-door relief—amounts to something below 13,000 ; but in 1861 the number was increased to 15,408 ; in 1862, to 16,003 ; and in 1863, to 15,817.

The reports of charitable institutions during 1861 and 1862 reflect, as might naturally have been expected, the wants of the people ; thus, in 1861,

* They were reduced to 12,008 in the year 1856, when “typhus,” to quote from Dr. Duncan’s report, “caused only 342 deaths, being 61 fewer than the number in the previous year, which was itself the lowest ever recorded up to that time.” They were only 12,721 in 1859, when “the mortality of Liverpool was lower than in any previous year within the period of authentic records.”

the Council of the District Provident Society states that "the relief department of the society exhibits an extraordinary increase; no fewer than 18,498 applicants, representing 82,334 individuals, having been relieved." But in 1862 this very increase was exceeded, the number of applicants having mounted to 36,897, representing 182,093 individuals.

So far, whether in the records of the parochial expenditure or of private charity, we have evidence of want largely existing among the people in 1861 and 1862, and of that want being apparently due to economical and political causes; but in the autumn of the latter year, as well as through the whole of 1863 and 1864, the fever itself had, by the well known principle of action and reaction, become a cause as well as an effect of indigence. In 1864 there were 1,774 deaths from typhus as against 1,304 in 1863, and 730 in 1862; and if we take only the cases of patients between 20 and 50—that is of persons capable of working for their livelihood—the numbers in 1864 were 1,094 as against 782 in 1863, and 358 in 1862.* It is impossible that typhus, which deprived so many families of the wages of their working members, could have existed without multiplying instances of grievous want; for taking the rate of death to sickness as 1 to 10, which is, I think, a fair average for cases between 20 and 50 years of age, as deduced from the experience of hospital and private practice, we find that the year 1864 showed an excess over 1862 of 7,360 persons ill of fever during the working ages of man's life. It must also be remembered in calculating the effect of this money loss from sickness on the well-being of the families of the sufferers, that the fever was restricted chiefly, if not altogether, to the streets occupied by labourers and artizans. It was, therefore, a loss not only evident and almost computable, but one which was limited to that section of the people the least able to bear it—to families earning daily and weekly wages, or to those assisted in part by parochial relief. But as a decrease in parochial expenditure of out-door relief occurred contemporaneously with the increase of fever in 1863, it is reasonable to conclude that the incidence of the poverty, unavoidably resulting from sickness, had not

* In the first report of the Commissioners for Inquiring into the State of Large Towns, there is the following evidence of Dr. Southwood Smith:—"The number of people who die can be taken only as an indication of the much greater number who fall sick. The mortality, even of the London Fever Hospital, to which the worst cases of fever in the metropolis are sent, is not, on an average of ten years, more than one in seven; in some years it is not more than one in ten or twelve, and comparing the number attacked with the number that die over the whole kingdom, the mortality would not in ordinary years amount to one in twelve. So that the number of sufferers from this disease is at least twelve times greater than the number of persons that actually perish from it. The classes of the population referred to are chiefly those occupied in labour. In case of their being affected by fever they are, of course, disabled from obtaining subsistence for their families. *This is one of the most powerful causes of pauperism.* The returns made in the year 1838 to the Poor Law Commissioners from the twenty metropolitan unions, in answer to queries sent to the medical officers, with a view to ascertain the actual prevalence of fever during one year, contained columns to show the number of persons receiving parochial relief in the several unions, as well as the number actually attacked with fever. From these returns it appears that of the total number who received parochial relief in most of the districts, a very large proportion received it in consequence of their being ill with fever. But in one district, namely St. George's, Southwark, out of 1,467 persons who received parochial relief 1,276—that is the whole number, with the exception of 191—are reported to have been ill with fever. This is an unusually large proportion; but these returns in general place in a most striking point of view the pauperizing influence of fever."

fallen upon the most necessitous, but had been chiefly sustained by labourers' families averse to receive the visits of the relieving officer. Indeed, although the number of paupers subsidized by the Parish Vestry in 1863 was nearly 3,000 above the average of ordinary years—showing that the pressure of want was not only severe but manifest enough to be rightly regarded as a cause of extensive weakness and low vitality among the people, and, therefore, the chief cause of epidemic disease—yet there was an actual though slight diminution of parochial pauperism (of 186 recipients of relief) as compared with 1862.

There is no evidence to show that this diminution was due to death, which might so act as effectually to lessen both the numbers and cost of paupers. It certainly did not arise from any niggardly disregard on the part of the Vestry of the position of the families of the sick; but was probably due to a partial revival of trade, which enabled some labourers, anxious for self-maintenance, to obtain occupation and wages. This brings before us the condition of the self-relying labourer as affected—firstly, by the events of the American war, and, secondly, by the loss of wages consequent on epidemic disease.

The number and value of deposits in a savings' bank for the operatives, is a sure test of the *power* of the labouring classes to save something out of their means; and hence may be regarded as a criterion of their well-being. Their confidence in the management of such an institution being equal in different years, a variation of results is a measure of capacity to save, or in other words, a measure of necessary expenditure to wages received. The Liverpool District Provident Society is such a savings' bank. Taking the four years 1861, 1862, 1863, and 1864, we find the number of deposits to have been as follows:—

Years	1861.	1862.	1863.	1864.
Deposits....	191,386	... 177,736	... 181,928	... 167,676.

It will thus be seen that the number of deposits in 1862 was 13,650 less than in 1861; and that although in 1863 there was an increase of 4,192 as compared with 1862, yet there still remained in 1863 a deficiency of 9,458 as compared with 1861—a deficiency which became in 1864 as high as 23,710. These are large figures if we add to the sum the difference of population between 1861 and 1864. But in 1861, although the number of paupers was immensely increased, the operatives in tolerably steady work do not seem to have yet felt the full force of the effects of the American war; for in their report of that year the committee of the District Provident Society says:—“Notwithstanding the unusually great distress which prevailed both at the beginning and close of the year, still the deposits received by the society, although in a slight degree inferior in *amount*, will be seen to have exceeded

in number those of the previous one.”* Let us look at this question through another phase of the society’s transactions. Their depositors are divided into two classes, viz., unsolicited depositors, and visitors’ depositors. The latter comprise not only the most numerous class, but also those who have families ; for it is generally from the hands of wives and mothers that the collectors receive the deposits.

The visitors’ depositors in the four years were as follows :—

Years ...	1861.	1862.	1863.	1864.
Number...	177,897	166,512	169,491	156,075
Amount...	£10,327 5s. 10½d.	£9,739 8s.	£10,559 16s. 9½d.	£10,167 11s.

Thus in 1862, the number of visitors’ depositors was 11,385 less, and the amount deposited £387 17s. 10½d. less than in 1861 ; while, though there was an increase both in numbers and amount in 1863, the numbers in that year were still £8,406 less, and the amount only £232 10s. 11d. more than in 1861, a sum which, considering the increase of population, is equivalent to a deficiency. But when we come to 1864, we find that notwithstanding the partial revival of trade, the *number* of depositors was 10,437 less even than during 1862, while the amount was £159 less than in 1861.

The last comparison is between the total amounts deposited :—

Years...	1861.	1862.	1863.	1864.
Amt...	£12,637 14s. 0½d.	£12,128 10s. 2½d.	£12,696 4s. 8½d.	£12,124 3s.

The true test of generally-diffused well-being is to be found not so much in the *amount* collected as in the *number* of depositors ; and, judged by both these tests, the year 1864—the year when epidemic typhus most prevailed—is worst.

There are no sufficient data to determine all the paths and byeways by which poverty reached those households which were by it prevented—during 1862, 1863, and 1864—from exercising the prudent economy of saving for a rainy day ; nor are there any data to illustrate the future history of families who, having no surplus beyond their daily bread, only required a temporary withdrawal of work, or the advent of sickness, to cast them from bare necessity to abject want. There are, however, abundant evidences of what may be termed a dislocation of the labour market, that is, of the old courses of employment having been so stopped, deranged, or lessened, as to throw the operatives out of their usual and accustomed modes of livelihood. It may be that commerce, after a time, opened new fields of occupation for the unskilled labourer ; but, in looking at the question in a social and economical point of

* The report of the District Provident Society speaks of distress existing at the beginning and close of 1861, and the following quarterly returns of mortality from typhus illustrate a parallelism between distress and fever. The quarterly deaths from that disease were 128, 119, 93, 143.

view, we must not forget the difficulty with which masses of illiterate men accommodate themselves to such changes.

The first example of such dislocation of labour is from the profits of the Old Company of Carters. It is sufficient to state that this association is of long standing, is employed by merchants of the highest eminence, is conducted with excellent regularity, and, as I understand, has consisted for years of about the same number of cartowners. I am also led to believe that its returns present a fair comparative average of the work done by private cart-owners unconnected with the society. Now, as cartage is also a criterion of the amount of portorage employed, the following statement is doubly interesting, as showing the falling off of unskilled labour employed within the fever period :—

1860 (for work done)	£18,049
1861 ,,	16,037
1862 ,,	9,922
1863 ,,	8,812
1864 cannot be given till June 30th.	

The next example is from the position of the Cotton Porters. The average number of men engaged in Liverpool as cotton porters—during the years 1860 and 1861—was, I am informed, about six to seven thousand; and in the years 1862, 1863, and 1864, from four to five thousand. This falling off of numbers so considerable indicates not only the pressure which the decline of the imports directly occasioned, but also represents somewhat of the increased pauperism and somewhat of that struggle in other departments of unskilled labour which the necessities of the unemployed necessarily produce. The year 1862 was that in which the pressure ~~was~~ most severely felt; but in the two following years there was a marked improvement, due, firstly, to the importation of China cotton, which employed a considerable amount of labour in picking, mending, &c.; and, secondly, to the rough condition of the American cotton brought by blockade runners, which required about three times the manipulation of cotton in ordinary years. My informant, a large employer of such labour, estimates the number of days the porters were engaged during the above years as follows :—One-half, for 6 days weekly; one-fourth, for 3 to 4 days weekly; one-fourth, for 2 to 3 days weekly. This, if we accept the number of men at 5,000, will give 1,250 generally, with families dependent on them, earning on an average from 7s. to 10s. 6d. per week, and other 1,250 from 10s. 6d. to 14s. It is, of course, quite possible to exist and pay house rent—even for a family of six to exist on this sum—but it must be in so poor a way as to produce the low vitality and constitu-

tional weakness which predispose to attacks of fever. There is no greater mistake than to assume the general rate of weekly wages to be a proof of the real income obtained by the labourer; for, during slack times, a large proportion of the men do not get anything like constant employment. So intimate, also, is the relationship—so close the *solidarité* of class interest—that an impulse felt by one section is conveyed from centres to large peripheries—

“The wave behind impels the wave before—”

until it reaches, with more or less force, the most distant members of the same social circle. Hence it is reasonable to conclude that the losses sustained by the cotton porters were, to a certain extent, likewise experienced by the whole body of unskilled operatives—their competitors in the wide and varied compass of manual occupation.

Yet unable to trace the movement and the course of its vibrations with any succinctness into all the multifarious concerns which engage the industry of the artisan, I restrict myself to describing the condition of the cotton porters and their associates employed in the removal and storage of merchandise, and take the third example of the dislocation of the labour market from the amounts paid by cotton brokers.

Two firms, among the largest in the town, have kindly given me the following summary of the average number of porters employed by them weekly, and of the amount of wages paid for portorage during the year :—

1st Firm. Years.	No. of Porters.	Amount Paid.
1860.....	45.....	£2,480
1861.....	57.....	3,134
1862.....	14.....	763
1863.....	15.....	817
1864.....	23.....	1,297
2nd Firm.		
1860.....	40.....	£2,200
1861.....	36.....	2,000
1862.....	17.....	980
1863.....	18.....	1,000
1864.....	24.....	1,300

One of my informants, a gentleman of almost unequalled experience in such matters, adds to his note :—“I dare say ours will be an average of all the brokers.”

Such being the falling off of unskilled labour during 1862 and 1863—the two first years of the epidemic—as illustrated by the business transactions of cotton brokers, I subjoin, in further proof of the same fact, the following from two of the largest American mercantile firms :—

1st Firm.	Porters. 1 Day.	Amount Paid.
1860.....	3,494.....	£2,928 14 5
1861.....	6,577.....	5,673 14 4
1862.....	2,886.....	2,228 0 1
1863.....	2,216.....	1,559 18 8
1864.....	1,779.....	1,156 2 8

2nd Firm.

Years.	Cotton Exports. Bales.	Grain Imports. Bushels.	Flour Imports. Barrels.	Day Labour Employed.	Wages Paid.
1860.....	11,950	348,000	19,000	8667	£1516
1861.....	11,700	210,000	500	8583	1502
1862.....	5936	16,000	..	5240	920
1863.....	490	220,000	5000	2907	510
1864.....	2900	9000	..	2747	480

The imports which, next to cotton, give most employment to the unskilled labourers of Liverpool, are those of wheat, flour, and other breadstuffs. These were, during the years of which I write, brought to the Mersey in the large quantities required by the balance of trade; and I purpose now to inquire whether what many have reiterated be true—that they have served as a substitute for cotton by giving occupation to the displaced labourers.

The annual imports of grain during 1860 and 1861 do not appear to have been compiled, at least, I have not been able to obtain them; but the following table is a comparative statement of their amount during the years 1862, 1863, and 1864:—

Years	Wheat. Qrs.	Barley. Qrs.	Malt. Qrs.	Oats. Qrs.	Beans. Qrs.	Peas. Qrs.	I. Corn. Qrs.	Oatmeal. Loads.	Flour. Sacks. Barrels.	
1862	2,968,979	27,783	11,211	178,379	183,757	55,863	972,796	178,384	253,025	1,043,665
1863	1,473,869	48,405	8073	192,487	176,787	46,049	808,718	224,120	253,483	835,869
1864	1,483,495	38,743	13,621	217,268	57,198	36,747	421,500	194,492	385,937	576,161

In analysing this schedule we remark, *firstly*, that the imports of wheat and Indian corn, the two substances which require most manipulation, and therefore afford most employment to the unskilled labourer, were considerably less in 1863 and 1864 than in 1862; *secondly*, that the amount of those grains which are calculated in quarters, stood during the three years as follows:—

	Quarters.
1862	4,398,768
1863	2,754,388
1864	2,268,572

while the flour, which, whether in sacks or barrels, would be equal in reference to manual labour, apart from cooperage, stood as follows:—

1862	.....	1,896,690
1863	.....	1,089,352
1864	.....	962,098

Therefore, so far as total imports of breadstuffs are concerned, it does not appear that the vacuity occasioned by the cotton dearth was filled up during 1863 and 1864, a fact confirmed by the following expenditure of two of the leading firms of Corn Brokers, which I am told is a very correct average of wages paid by the trade for portorage during 1861, 1862, 1863, and 1864:—

	1st Firm.				2nd Firm.		
1861	£2,601	18s. 8d.	||	£8,342	0s. 11d.	
1862	2,719	2 10	||	4,844	0 11	
1863	2,904	6 1	||	2,610	7 1	
1864	2,427	17 3	||	1,737	5 11	

An emporium, however, so vast as Liverpool, which receives consignments from every region of the world in exchange for the manufactures of England, will necessarily attract to its docks produce and merchandise of all descriptions; and I was anxious to obtain reliable data by which to judge how far other staples besides corn assisted in relieving the unskilled labour market. One very large general Produce Broker writes that the wages paid by his firm were, in 1864, twenty per cent less than in 1863. Another would have obligingly placed his annual wages account at my service, but I found it was kept in totals, without any distinction being made between payments for skilled and mere portorage labour.

It is this want of distinction as to the nature of the work done which impairs, in reference to our inquiry, the value of the following abstract of monies paid at the Dock warehouses:—

Year.	Albert.	Stanley.	Wapping.	Total.
1861 ...	£41,968 ...	£33,496 ...	£12,647 ...	£88,111
1862 ...	£44,187 ...	£22,653 ...	£13,203 ...	£80,043
1863 ...	£46,636 ...	£20,764 ...	£14,796 ...	£82,196
1864 ...	£60,620 ...	£26,226 ...	£17,517 ...	£104,363

It presents, however, among all the investigations which I have made, the most gratifying and encouraging feature; for, though it confirms the existence of great slackness of work during the first two years of the epidemic, it likewise shows that commerce had within the last twelve months, by accumulating in these spacious warehouses much of other produce, assisted in disseminating large sums of money among the working classes. But this stimulus to industry, whatever may prove to be its extent among the unskilled labourers, or its influence as an equipoise to the lessened disbursements of mercantile firms when compared with their expenditure in 1861, came too late to counter-

act the effects of the cotton dearth ; or to prevent that impoverished condition and distress of the people which preceded and accompanied fever, both as cause and effect. I say too late ; for, taking up again the records of parochial and private charity, we find that they reflect, in 1864, the existence of very great and exceptional want. I have already mentioned the enormous increase of applicants to the relief department of the District Provident Society in 1862. Unfortunately there exist no documents by which to determine by comparison the relative numbers in 1863, for in that year the published transactions of the charitable associations of the town are rendered incomplete by their having been all merged into one society, called the Central Relief. The savings' bank department of the District Provident Society is distinct from its relief department, and remains without change. The statistics of the Central Relief Society are very interesting in two points of view—*firstly*, as showing that want was then very prevalent ; and *secondly*, as pointing to its incidence on the class of the population somewhat above the habitual paupers ; for its sixth rule provides that relief shall not be granted to persons receiving parochial assistance, but in extreme exceptional cases. The amount disbursed from June 25 to December 10, 1864, was within a few pounds double that in the same period and the same number of days in 1863 ; the persons relieved were 1,061 more in the same months of 1864 than in those of 1863. The soup kitchens, which were not opened at all during December, 1863, were opened in 1864, on the 5th December ; and before the end of the year the society, in addition to the usual sago soup, dispensed a meat soup, prepared from beef, with peas and proper seasoning ingredients. It is thus evident that there were more calls on the exercise of private charity during 1864 than in 1863. Then with regard to the recipients of parochial charity, we find that although the outdoor expenditure of the workhouse indicated in 1864 no increase of pauperism, want, or indigence, the position of the fever cases in that establishment did so most conclusively. I have previously showed that the number of fever patients had greatly increased, averaging during the last fourteen weeks of the year, 350 constantly in hospital. Of these the greater number (about five-eighths) were persons who had never before received parochial help, and who would not, except in sickness, consent to be inmates of a workhouse. “ Now it may be asked ” (I quote from my special report on this subject) “ was there any evidence of indigence having preceded fever ? ” Mr. Carr, the Governor, assures me that, though familiar with the appearance of the people during the Irish famine fever, he considers the general condition of the patients this year, as regards clothing, to be exceptionally bad. He has, thereon, appealed to the charity of the benevolent for help to dispense clothing to the half naked convalescents on their leaving. The sub-

ject was brought before the Vestry Board, when Mr. Whitty, recognising the truth of Mr. Carr's description, proposed that help in clothing should be given at the public expense. The conclusion which I drew from these facts appears to me unanswerable. Large numbers of the labouring class are found in a workhouse fever hospital. The reluctance with which these people permit any parochial interference with their affairs, and the dislike with which they regard the possibility of being inmates of a workhouse, first suggests the idea that there must have been the pressure of unusual distress at home. Their clothes are seen by the Governor to be so exceptionally bad that he appeals to the benevolent for aid in their behalf. Their ragged, insufficient clothing indicates that the indigence was of long continuance, for it is in matters of less essential necessity than daily bread that the pinch of poverty first shows itself.

It is not possible to arrive, by the deduction of uncertain and speculative science, at absolute demonstrable and exact truth on a question so recondite as that of the causation of epidemic disease ; but the following corollaries follow from the premises which have been detailed, and lead, with every appearance of high probability, to the conclusion that destitution was the cause of the epidemic.

1stly. Great distress in the labourers' class, accompanied by an enormous increase of parochial pauperism, existed previously to the winter of 1861 and spring of 1862, when the typhus began to be in permanent excess.

2ndly. The distress and the prevailing fever were both so simultaneously increased during 1862 as to indicate the parallelism of cause and effect.

3rdly. The number of recipients of workhouse relief in 1863, though reduced by 186 out of 16,003 in 1862, showed that, in spite of a partial revival of trade, the want was exceptionally great as compared with the ten years before 1861.

4thly. The transactions of the Central Relief Society, and the condition of the fever patients of the Workhouse Hospital in 1864, demonstrate that, whatever might be the bettered circumstances in trade or commerce, the distress was not alleviated among the persons immediately above the rank of habitual paupers.

5thly. It was of necessity, and by reason, *firstly*, of want of employment, and, *secondly*, especially in 1864, by the losses sustained by sickness in their homes, that so many individuals of the working classes ceased to contribute their deposits in the District Provident Society.

6thly. The pressure which prevented the better-off from exercising a prudent saving, threw the more necessitous into abject want.

It may surprise many to have it even hinted that want and destitution prevailed so widely among the people as to be the chief cause of this, as of every preceding epidemic of typhus known to medical history ; for during the years of which I write our fashionable streets bore evidence, by the great increase of

splendid equipages and the accumulation of treasures of art and luxury, that much prosperity was not only co-existent with the want which I have described, but also co-dependent on the same causes.

Fortunes of large amount are said to have been realized by speculators on the very cotton famine which threw thousands of labourers out of work; while shipowners, to whom the American internecine war had given almost a monopoly of the carrying trade, obtained such advantageous freights as to more than counterbalance the losses sustained by the reduction of cotton imports.*

OVERCROWDING.

Overcrowding, especially in the central and poorer localities of the town, has always extensively prevailed in Liverpool; the evil, however, has comparatively been much abated since the passing of the Sanitary Bill of 1847, and the enforcement of compulsory regulations for common lodging-houses. It would now be impossible to detect, in the lowest neighbourhoods, any instances approaching those described by Dr. Duncan, when 50 or 60 people were found

* It would have been interesting to compare the amount of animal food consumed in the Borough of Liverpool during the years of prosperity and good wages, with that during the years of the fever period; so as to form some opinion whether flesh meat constitutes at any time to any appreciable extent the food of the labourer. There used to be accounts kept by the Superintendent of St. John's Market of the number of animals slaughtered in the Borough, but those documents have, I understand, been lost or misplaced so that we have no memoranda on the subject referring to prosperous years. I subjoin a statement of animals slaughtered during 1862, 1863, and 1864, with average retail market price of meat in those years, as well as in 1860 and 1861. The meat was cheapest in the prosperous year of 1860.

The average price (retail) of flesh meat in 1860, was 6d., 7½d., and 8d. per lb.; in 1861, 6½d., 7½d., and 9d.; in 1862, 6d., 7½d., and 8½d.; in 1863, 7d., 8d., and 9d.; in 1864, 6½d., 7½d., and 9d.

1862.						
	Beasts.	Sheep.	Lambs.	Calves.†	Pigs.	Goats.
Abattoir	21314	103034	....	12325	9058	1
Parish	16258	39191	12706	4848	10306	6
Out Township....	4542	17473	5280	189	8011	1
	42114	159598	17986	17362	27375	8
1863.						
Abattoir	22011	116023	....	12648	12804	....
Parish	16993	46160	12377	5415	17426	2
Out Township....	4602	18362	5524	168	10101	....
	44206	170554	17901	18231	40421	2
1864.						
Abattoir	21540	109896	....	12741	13685	....
Parish.....	18543	42400	11947	4941	18625	8
Out Township	5117	19769	4043	321	12683	....
	45200	172065	16890	17003	44903	8

in a house containing three small rooms, and upwards of 40 men were found sleeping in a cellar. But, though circumstances are changed for the better in this respect, there still remains in the habitations of the working class an undue and injurious packing of members of the same family, or even of different families in bedrooms too small, confined, and ill-ventilated for the requirements of health. Three causes chiefly conduce to this effect, viz., *emigration, subletting of rooms, and bad home arrangements of families*. Before, however, giving any description of the mode or extent of action of these several influences, it is necessary to explain that by overcrowding is not here meant any slight deficiency of that cubic space which sanitary science estimates as necessary for maintaining the full vigour of man's health and strength. The executive authorities require for this purpose, in the poor-house dormitories and prisons, a cubic space of not less than 500 feet for each individual, combined with such appliances of ventilation as will cause an entire renewal of the air about once in an hour; and the Government Commissioners say, in reference to barrack accommodation:—"We would urgently direct the attention of the Minister of War to the absolute necessity of providing more room for the soldier in barracks, and that instead of 500 cubic feet of space, 700 or 800 cubic feet should be allowed per man." In London, the Board of Works of a very populous district announces "that it is held by the magistrates that any house occupied by more than one family, and not being a common lodging-house, is overcrowded within the meaning of the Nuisance Removal Act (18 and 19 Vict., c. 121, s. 29) if the cubic space available for each inmate fall short of four hundred cubic feet." If, by this, it be implied that such an amount of air is attainable by legislative means in rooms situate in localities likely to be overcrowded, it presents to those unacquainted with metropolitan customs a remarkable and strange fact, in the face not only of the well-known want of sufficient accommodation for labourers near the seats of industry, but also of the frequent representations in the daily papers of the sufferings of the numerous houseless poor; for it is almost incredible that the necessities of indigence would not largely reduce this allotted space before the wretched wanderers were driven to sleep in the open air. Probably the decision of the magistrate was merely meant to confirm, by judicial authority, an incontestible hygienic precept; but if so, whatever its effect in London, it would be perfectly useless in Liverpool; firstly, because the worst offenders are persons whom destitution has sunk below the reach of penalties; secondly, because in the older parts of the town there are few dwellings of even respectable artisans and tradesmen which do not, at least in respect of some inhabited rooms, come within the prohibition. A law so strictly interpreted, however admirable

in theory, becomes, by the very magnitude and extent of the evil, practically inoperative; for it would include within its interdict almost all the houses of the poor in which more than one family reside—a number to be calculated by tens of thousands. As my object is not merely to proclaim the maxims of sanitary science, but to describe things real and existing, I am obliged, in order to be practical, to reduce the standard of comparison, by which, in the following remarks, I speak of overcrowding, to that amount of cubic space which regulates the arrangements of registered lodging-houses.

I found that in London the cubic space allotted for each lodger was very near the 300 cubic feet sanctioned by the Health Committee of Liverpool. This amount is, even with constant inspection and the most stringent regulations of cleanliness and ventilation, barely sufficient for health, especially in districts where houses are massed together on restricted surface area; but, practically, it is found impossible to carry out the Act otherwise, due regard being had to the position of the tramps and workpeople for whom the accommodation is required. Yet, the registered lodging-house has many sanitary advantages not enjoyed in the private homes of the working classes; besides general cleanliness, the bedrooms must be unoccupied and the windows opened for hours during the day; there must be proper ventilation at least possible during the night, and no person suffering from contagious disease permitted to remain with the other lodgers on the premises.

Under such regulations these establishments have proved of great value, and on no occasion more notably than during the present epidemic, when comparatively few cases of sickness occurred in them, and none, as far as I am aware, in which fever spread among the inmates. But if the space allotted in registered lodging-houses for rooms occupied as sleeping apartments be within the verge of injurious overcrowding, what must be the condition of those in private dwellings, occupied by separate families, where an equal number of people live by day and night; where windows are never opened; where cooking and washing and other household occupations are performed; where filth is allowed to remain and pollute the air; where every crevice by which the cool fresh breeze can enter is carefully closed; where sickness even of contagious character adds its poisonous miasm to the confined and vitiated atmosphere; where no seclusion is possible for the mother in her hour of agony; and, lastly, where death itself must remain for days a dweller beside the bed of the living. Such is the single room occupied by a family. Yet among the thousand of houses in the courts, alleys, and lower streets of the town, it would be so exceptionally rare to find any in which more than 300 cubic feet were *always*

apportioned in the sleeping apartments to each individual, that I am obliged reluctantly to accept that standard as the one by which the extent of overcrowding in Liverpool must be judged. If the rule by which we measure the prevalence of injurious overcrowding be itself an example of the evil in a scarcely mitigated form, what can more forcibly illustrate the wretched condition of the rooms which fall greatly short of its requirements.

EMIGRATION.

The emigration from the Port of Liverpool during the last five years was as follows :—

Years.	Total Emigrants.	Irish Emigrants.
1860	83,774	75,875
1861	55,029	50,122
1862	64,314	37,130
1863	137,982	64,204
1864	125,445	67,877

During the months of March, April, May, and June the trade is brisk, and the temptation to overcrowd great; but as the arrival of the emigrants, their purposed destination, and the lodging-houses to which they are drafted by agents and contractors are always speedily known to the inspectors, and a strict watch kept on their arrangements while on shore, it is reasonable to conclude that few obvious infractions of prescribed sanitary rules will take place without detection. Hence the following list of proved cases of overcrowding will afford a pretty exact idea of the small and inappreciable influence exercised in that direction during late years by the transit of sea-going passengers.

Years.	Overcrowding in all Lodging-houses.	In Emigrants' Houses.
1860	109	40
1861	43	14
1862	58	11
1863	46	24
1864	44	23

One peculiarity has attended the Irish emigration from this port during 1863 and 1864. The greater number of the passengers are what are termed prepaid, that is, franked by tickets, the money for which has been forwarded by relatives or others in America. It becomes by the agreement the interest of the broker accepting the contract, that they should not reach Liverpool much before the sailing of the vessel, and thus many did not even sleep on shore for a single night, but went on board ship immediately on their arrival from Ireland. Nor are the emigrants likely to have brought with them con-

tagious or other diseases ; for while formerly the inspectors were accustomed to see among the Germans and Irish an average proportion of children and persons of advanced age, they now remark, in contrast, a preponderating number of active young men and women.

SUB-LETTING ROOMS.

The practice of letting single rooms to separate families is so common that there are few working-men's houses in the central districts of the town which are not either constantly or occasionally occupied in that manner. This arrangement, where the house is large and the apartments very numerous, is sometimes the direct act of the agent or proprietor of the premises. More frequently, however, it is adopted by the principal tenant, either for profit or from the necessity of ekeing out by combination with others the payment of the weekly rent. This distinction of motives and of position is important in estimating the risk or probability of overcrowding, or the hopefulness of success in enforcing legal measures for its correction. The proprietor has a direct self-interest in keeping his tenement in good repair, and in not letting rooms to persons who, by reason of their large families or necessitous circumstances, are likely to be flagrant offenders against prescribed sanitary regulations to the hazard of spreading disease among the tenants of the house. The rooms also of houses so sublet are generally more lofty than those in the smaller cottages of the poor ; but the chief protection against overcrowding of this kind rests on the fact that the remedy is efficient and readily applicable ; for the proprietor is within reach of the penalties of the law.

I subjoin three examples of houses sub-let in rooms by the proprietors. In two of them, viz., those in Beau-street and College-lane, very considerable expense has been incurred to sub-divide each room by partitions into day and night compartments. The advantages of this arrangement for decency, cleanliness, and tidiness are evident ; but it so impedes the circulation of air in the sleeping compartment as on sanitary grounds to be objectionable.

1st example : No. 17, Beau-street. The sleeping compartments have no outward window, door, or fire-place for ventilation, and are about a *third* of the dimensions given below for the whole room.

No. of Rooms.		Dimensions of Room.	No. of Fa- mily.	Rent per Week.	Form of Window.	
subdivided		... 2760	... 3	... 2s. 9d.	... Up and down	...
1	„	... 2760	... 3	... 2s. 9d.	...	...
1	„	... 2376	... 4	... 2s. 6d.	...	...
1	„	... 2484	... 3	... 0s. 0d.	...	... let with shop.
1	„	... 2376	... 2	... 0s. 0d.	...	... „

No. of Rooms.	Dimensions of Room.	No. of Family.	Rent per Week.	Form of Window.
1 subdivided	... 1449	... 4	... 2s. 6d.	... Up and down ...
1 „	... 2484	... 2	... 2s. 6d.	... „ ...
1 „	... 2024	... 3	... 2s. 6d.	... „ ...
1 „	... 2024	... 2	... 2s. 6d.	... „ ...
1 „	... 2484	... 4	... 2s. 6d.	... „ ...
Shop and two rooms...	...	...	6s. 6d.	...

In stating the number of inmates, two children below ten years of age are counted as one; thus, in the room specified as 4, there were really six souls, in those as three, four.

2nd example: No. 24, College Lane. Here the sleeping compartment bore the same proportion of one-third to the whole room, and was without external ventilation.

No. of Rooms.	Dimensions.	No. of Family.	Rent per week.	Form of Windows.
1 subdivided	... 2070	... 5	... 4s. 0d.	... Up and down.
1 workshop	... „	... 0	... 3s. 3d.	... „ „
1 subdivided	... 2691	... 3	... 3s. 3d.	... „ „
1 „	... 3519	... 8	... 4s. 0d.	... 2 windows up and down
1 „	... 3128	... 6	... 4s. 0d.	... „ „
1 „	... 2392	... 6	... 3s. 0d.	... 1 window up and down
1 not subdivided	... 768	... 2	... 1s. 0d.	... hinge.
1 subdivided	... 2760	... 5	... 2s. 6d.	... „
1 „	... 2392	... 5	... 3s. 0d.	... up and down.
1 not divided	... 768	... 1	... 1s. 0d.	... hinge.
Cellar	... 2208	... 3	... 5s. 0d.	... up.

3rd example: No. 27, Frederick Street. Here no alterations have been made in the arrangement of the rooms, but in two instances rooms communicating by an inner door are tenanted by the same family.

No. of Rooms.	Dimensions.	No. of Family.	Rent per week.	Form of Windows.
1	... 1458	... 3	... 2s. 6d.	... up.
1	... 1728	... 2	... 3s. 0d.	... up and down.
1	... 2016	... 6	... 3s. 6d.	... 2 windows up and down
2 connected by inner door.	... 672 } ... and } ... 1152 }	... 4 }	... 3s. 0d.	... up and down.
1	... 2016	... 6	... 3s. 3d.	... up and down.
2 connected by inner door.	... 672 } ... and } ... 1152 }	... 5 }	... 3s. 0d.	... 2 windows up and down
1	... 2048	... 3	... 1s. 0d.	... up and down,
1	... 1904	... 5	... 3s. 0d.	... skylight, no fireplace 2 windows up and down

The above examples are, I believe, very fair specimens of the better kind of such sub-let houses; they have no doubt many disadvantages both in a moral and sanitary point of view, but on the whole they are to be commended. It is indeed in this direction that I hopefully look for melioration in the domiciles of our working classes; when limited joint stock companies shall undertake the responsibility of owning large premises, arranged in small suites of well ventilated rooms, for the accommodation of the families of artisans. The payments of 3s. 6d., 4s., and 5s. for single rooms, show that tenants will be found to make such a philanthropic undertaking commercially remunerative.

The next examples which I shall give are where the tenant follows the business of sub-letting—like that of lodging-house keeping—as a means of livelihood from realised profits. Here the temptation to overcrowd is great; for, not only are the character, habits, and even number of the room keepers objects of very secondary importance to that of immediate gain, but such premises not being under the constant surveillance of night-inspectors afford opportunities of receiving at race weeks, cheap trips, and other similar occasions, numbers of strolling vagabonds into unoccupied rooms. Such houses are also generally in a dilapidated state; for the tenant who sub-lets for profit dare seldom apply to his landlord for repairs. In these places we likewise see many cases of those *unhumanising* influences which weaken and destroy the feelings and affections that raise man above the level of the brute; indeed the tenants of the second room in Trueman-street were two couples of young married persons with only one large straw mattress for a bed.

1st example: No. 9, Trueman-street. Tenant, Mary Bartley. Rent, 7s. per week.

No. of Room.	Dimensions.	No. of Family.	Rent per Week.	Form of opening of Window.
1	... 1080	... 3	... 3s. 0d.	... 2 windows up.
1	... 998	... 4	... 3s. 0d.	... 1 window up.
1	Used by tenant as kitchen, and for her own sleeping apartment.			
1	... 1494	... 4	... 3s. 6d.	... 2 windows up.
1	... 1089	... 3	... 2s. 6d.	... 1 window up.
1	... 819	... empty	...	... slide.
1	... 1183	... 4	... 2s. 0d.	... up.
1	... 840	... 2	... 2s. 6d.	... slide.

2nd example: No. 19, Sawneypope-street. Michael Mullaney, tenant. Rent, 7s. 6d. a week.

No. of Room.	Dimensions.	No. of Family.	Rent per Week.	Form of opening of Window.
1	... 1268	... 4	... 2s. 8d.	... up
1	... 1095	... 2	... tenant	... up
1 kitchen	... 600	... 0	... —	... —

No. of Room.	Dimensions.	No. of Family.	Rent per Week.	Form of opening of Window.
1	... 1604	... 5	... 2s. 6d.	... up
1	... 933	... 3	... 1s. 8d.	... up
1	... 534	... 1	... 1s. 8d.	... slide and no fireplace.
1	... 1278	... 4	... 1s. 9d.	... up

The cellar is used by the tenant as a shop, but is not allowed to be inhabited at night.

Frequently the tenant of a house containing eight or ten rooms applies for some of them to be registered for lodgers, and sub-lets the remainder not occupied by his own family. In such cases we are able to exercise a watchful supervision over the whole inmates of the house, both in respect of sickness, overcrowding, and moral arrangement. I give two examples, taken from streets in a very bad neighbourhood.

1st example: No. 13, Sawneypope-street. Mary M'Connell, tenant. Rent, 8s. 6d. per week.

No. of Rooms.	Dimensions.	No. of Family.	Rent per Week.	Form of opening of Window
Cellar	... 1014 ...'	3	... 1s. 4d.	... slide.
1 room	.. 963 ...	3	... 2s. 0d.	... up and down.
1 „	... 1089 ...	1	... tenant	... up.
1 „	... 590 ...	2 sons of tenant	... „	... fast.
1 „	... 1339 ...	2	... 2s.	... up.
1 „	... 779 ...	2	... 2s.	... up.
1 „	... 473 ...	2	... 1s.	... slide.
1 „	... 1095 ...	3 lodgers	... 4d. each per night	... up and down.
1 „	... 650 ...	1	... 1s.	... slide.

2nd example: No. 27, Chisenhale-street. Michael Lonergin, tenant. Rent, 13s. per week.

No. of Rooms.	Dimensions.	No. of Family.	Rent per Week.	Form of opening Windows.
1	... 1213	... 4	... tenant	... up.
1	... 892	... 2	... 1s. 6d.	... up.
Kitchen.				
1	... 1422	... 4½	... 2s. 0d.	... up.
1	... 802	... 3	... 3s. 0d.	... up.
1	... 1200	... 4 lodgers	... 4d. each per night	... up and down.
1	... 1138	... 3	... 2s. 0d.	... up.
1	... 608	... 2	... 1s. 0d.	... up.

The cellar of this house is not habitable.

But the chief instances of overcrowding to great excess are to be found where the tenant sub-lets for the purpose of helping to pay rent, and in what are locally termed the "straight up and down" houses, containing three rooms

one above the other. Such constitute the tenements of courts and the lower streets of the town, and such are, as a rule, the habitations of the working classes. They are generally devoid of any thorough draft of air, being built either back to back to other similar houses, or possessing only front windows. In the courts all cellars have been condemned as uninhabitable; and in the streets they cannot be used as dwellings where the height of every part from the floor to the ceiling is less than seven feet, or of which the surface of the floor is more than four feet below the surface of the footway of the nearest street. The cubical dimensions of the lower rooms (Nos. 1 & 2) will generally average about 900 to 1,000 feet, and the upper one, almost always without a fireplace, from 700 to 900 feet. The windows seldom admit of any other mode of opening than that of the lower frame. I cannot better illustrate the extent of overcrowding which prevails in these three-roomed houses than by the subjoined result of two nights' inspection:—

No.	Street	Tenant.	Rooms in			Remarks
			No 1.	No 2.	No. 3.	
20—	Jordan	... Mary Garner	... 4	... 2	... 3	Parish relief
7—	New Hall	... Bart'mew Tobin	... 3	... 3	... 5	„ „
9—	„	... Mary McNulty	... 1	... 5	... 0	
11—	„	... Patrick Coyne	... 3	... 3	... 4	
13—	„	... Martin Tucker	... 5	... 3	... 3	Parish relief
15—	„	... Michl. Bradley	... 0	... 2	... 7	
17—	„	... Bart'mew Gaughan	5	... 4	... 0	Parish relief
7—	Brick	... Catharine Stephens	2	... 3	... 2	
17—	„	... Alice Sullivan	0	... 5	... 2	
19—	„	... Mary Roach	4	... 8	... 5	Parish relief
21—	„	... Sarah Goughran	5	... 8	... 4	„ „
23—	„	... Peter Harrison	5	... 3	... 2	„ „
34—	„	... Eliza Elliot	3	... 8	... 7	
36—	„	... Patrick Connor	4	... 4	... 0	
38—	„	... Wm. Crawford	2	... 3	... 0	
25—	„	... Thomas Jenning	2	... 3	... 5	
2—4	Ct., Chartres	... James Rapell	0	... 5	... 0	
4—4	Ct., „	... Thomas Healy	0	... 4	... 3	
2—6	Ct., „	... Michael Hanlon	0	... 6	... 0	
4—6	Ct., „	... Patrick Corless	0	... 7	... 0	
6—6	Ct., „	... Daniel Martin	0	... 3	... 4	
8—6	Ct., „	... William Mace	0	... 5	... 0	Parish relief
10—6	Ct., „	... Patrick Finnegan	0	... 4	... 2	
6—35	Ct., Chisenhale	... William Stott	... 3	... 3	... 0	
5—	„ „	... J. McKenna	... 0	... 5	... 0	

No.	Street.	Tenant.	No 1.	Rooms in		No 3.	Remarks
				No 2.	No 3.		
52—	Chisenhale	... Michael Healy	... 0	... 5	... 2		
46—	"	.. G. Connell	... 0	... 6	... 0		
4—18 Ct.,	Chisenhale	... J. Goodeson	... 0	... 3	... 2		
6—	"	... Patrick Grallin	... 0	... 5	... 3		
7— 6 Ct.,	"	... Michael Donnelly	0	... 5	... 2		
5—	"	... Michael Bryan	... 0	... 3	... 3		Parish relief
1—	"	... Michael Burns	... 0	... 3	... 0		
39—	"	... Robert Graham	... 3	... 3	... 4		
28—Harrison		... Bridget Conolly	... 5	... 2	... 8		Parish relief
34—	"	... J. Cumiskey	... 4	... 3	... 2		" "
36—	"	... Michael McGuire	6	... 5	... 4		
40—	"	... D. Daugherty	... 3	... 2	... 2		
7—	"	... Eliza Morgan	... 4	... 2	... 0		
44—	"	... Martin Daugherty	2	... 5	... 0		Parish relief
6—Henry Edward		... John Kerson	... 2	... 4	... 5		
8—	"	... John Curran	... 4	... 6	... 7		
16—	"	... Bridget Quinn	... 4	... 3	... 4		
1—7 Ct., Hy. Edward		... Mary McGuire	... 4	... 3	... 5		
7—Henry Edward		... Dudley Caven	... 3	... 4	... 2		
11—	"	... William Knavessey	1	... 3	... 5		
13—	"	... Thomas Callon	... 4	... 3	... 2		
56—Sawneypope		... Michael Gilmour	7	... 5	... 3		
2—4 Ct., Midge Hall		... Anthony Franc	... 3	... 4	... 5		
3—	"	... J. Govon	... 2	... 5	... 5		
12—Midge Hall		... Thos. McGuire	... 2	... 3	... 4		
14—	"	... Ann Joyce	... 2	... 4	... 5		
2—6 Ct., Midge Hall		... John Larkay	... 0	... 4	... 6		
22—Midge Hall		... Thomas Devilt	... 0	... 5	... 6		
4— 8 Ct., Midge Hall...		Ter. O'Donnell	... 0	... 4	... 3		
4—16 Ct.,	"	... J. Carrighan	... 3	... 2	... 4		
34—Midge Hall		... John Morgan	... 3	... 4	... 7		
5—7 Ct., Stockdale		... Patrick Mealey	... 7	... 6	... 3		

In those of the above which were most crowded, the people were found in painfully abject circumstances. In some cases, as in Daugherty's, No. 40, Harrison-street, Mary Roach's and Sarah Goughran's, 19 and 21, Brick-street, there was literally no furniture whatever, the men and women lying together promiscuously on straw or on the bare boards. In the case of Michael Gilmour, however, there was, as far as the family was concerned, no just plea of poverty, for he was in constant employment under the Corporation; yet of the seven

people crammed into a room of 1,057 cubic feet, two were himself and wife, three his children, and two men lodgers. In the most flagrant cases of overcrowding, the Health Committee direct proceedings to be taken under the certificate of the Medical Officer of Health against both the tenant and landlord ; and the magistrates have decided that the landlord is the person permitting the overcrowding under the provisions of the Nuisances Removal Act, if he has not taken effectual steps to abate it after receiving notice from the sanitary officers. But whether the forcible ejectment of the tenant (the landlord's summary remedy of this great evil) will succeed in removing it or merely in transferring it to other localities, is one of those social problems which only experience can solve. We have managed to trace the present domiciles of some of the ejected ; they had transferred their resting places to the bare boards of rooms in other houses, but, so far, there was no overcrowding. There is no question connected with the welfare of society more important than this of overcrowding, whether we regard its debasing effects on the morals of the people by the promiscuous sleeping together of persons of different sexes in the same room, frequently on the same pallet ; or its irresistible incitement to the use of ardent spirits by the depressing result of mephitic effluvia on the nervous system ; or its abundant harvest of crime and cruelty, the accompaniments of immorality and drunkenness ; or, lastly, its enormous cost to the community and individuals by the sickness, disease, and death, which it occasions. And, commensurate with the importance of this evil is necessarily that of the means for correcting it. In a paper of deep and painful interest, read by Mr. Godwin, of London, before the Social Science meeting at York, it was recommended to the section that application should be made to Parliament to place the houses, generally, of the poor under the surveillance and regulations which attach to registered lodging-houses. Whether such a plan would be practicable with an Englishman's watchful jealousy of the sacred rights of liberty and home privacy, or whether, if practicable, on principle, it would be so by the efficiency of inspectors, I cannot say. The night inspections, of which I have given results, I believe to be informal ; and where interference has followed they have on subsequent occasions been occasionally, though rarely, resisted by the tenants. I give, however, my hearty adherence to one part of Mr. Godwin's plan, viz., that the houses which are sub-let should be registered, and the landlords obliged to comply with some simple requirements for proper ventilation, such as windows opening up and down, and zinc-pierced panes where there are no chimneys. The true remedy, however, is to provide more available accommodation for the poor, and hence the value of Mr. H. T. Wilson's suggestion, that efforts be made by the Council to afford facilities for this purpose. Whatever be done,

there nevertheless will always exist the overcrowding of indigence. If temporary want of work be, as is not unusual, the motive which impels to overcrowding by sub-letting, the greatest forbearance is requisite in the adoption of means for its correction. A summary appeal to law would be cruelly inappropriate; complaint or notice to the landlord might, by leading to ejection, aggravate rather than remove the evil. The following is an average example of many such cases, and is given because brought to my observation while engaged in writing this report:—Charles Hall, No. 14, Strawberry Gardens, Hygeia Street, a rope maker by trade, and earning £1 per week when employed, had been out of work for nearly two months. The rent of his house was 3s. 6d. per week. It contained four apartments, viz., kitchen, scullery, and two bedrooms. He sub-let the larger room for 2s., and with his wife and family of six children occupied at night the smaller bedroom, the dimensions of which were about 700 cubic feet; there was no chimney to the room, and the window opened from the lower frame. He had parted with his bed furniture, and they all slept on the floor. Being informed that ejection by his landlord would too probably be the result of a complaint against him before the magistrates, he at once complied with the advice given to occupy the two bedrooms with his own family; but it will depend upon the accident of being able to obtain work and wages whether he may not soon be found in a worse plight, the tenant of a single room, his only domicile by day as well as night.

In looking over the list of rooms visited during the two nights' inspection, we cannot but be struck with the curious circumstance that one apartment was frequently overcrowded to suffocation, while the others were perfectly empty. It was thus with James Russell's, Michael Haulon's, Patrick Canless's, and William Mace's in Chartres-street, and John McKenna's and G. Connell's in Chisenhale-street. The overcrowding of some rooms while others contain only one or two persons, may, of course, be due to the tenure of the sub-letting; but such an explanation does not apply where the rooms are empty, and where the tenant's family, with others as lodgers, sleep by choice together without distinction of sex or age, as in the example given above. I wish that I could say that it was only among the most ignorant and depraved, only where destitution and suffering had blunted the physical and moral senses, that this offence against decency and health was committed; but whether attributable to stupidity, indifference, ignorance, or bad habits, it is no less true that it prevails extensively in the families of labourers and artisans, where poverty can form no extenuating excuse. In reality, I believe that there are not 1,000 of the whole 18,000 houses in courts, or more than one-tenth of the whole "straight

up and down" houses in streets, whether inhabited by one or separate families, which are not occasionally overcrowded in respect of some of their rooms; that there are few sub-let houses of this description, in which the arrangements are not, to say the least, verging on indecency, and many where such arrangements are made of choice, and not of necessity, and are considered in no way extraordinary or culpable by the people themselves.

The chronic poisoning of vital air from overcrowding, and the constitutional debility therefrom resulting, may be considered the chief permanent cause of that amount of typhus, which in ordinary years, injuriously characterises Liverpool; but it does not so clearly appear to have contributed by any unusual increase to the production of the epidemic. During the three years there has been no apparent inflow of population from extraneous sources; and though the closing of the cotton mills in 1862, before the establishment of the relief fund, brought to the town many strangers from the manufacturing districts in search of employment, yet neither from thence nor from Ireland has there been such an invasion of immigrants as to influence the extent of overcrowding in a population of five hundred thousand souls. But though overcrowding from 1861 to 1864 may, as compared with the previous ten years, be considered as a fixed quantity, yet it has ever prevailed to that intensity which prepares the people to suffer injuriously from the superintention of any other agency, however slight, of vital depression. A long continued east wind, which by keeping the homeward bound fleet of vessels from the port, throws out of employment the labourers dependent on that branch of industry; or the superintention of frost or snow, which by interfering with building and other out-door works checks the occupation of the artisan, are at once reflected in the death registry of typhus. It was thus in the spring of 1861. A similar but more continuous result followed that dislocation of the labour market occasioned by the effects of the American war. It seems therefore correct to infer that while overcrowding, whether in rooms or on superficial area, is the chief and permanent cause of typhus in Liverpool; *indigence*, the supervening accident distinguishing the years 1861 to 1864 from those immediately preceding them, became, by sinking still lower the vitality of the people, the *cause of the epidemic*. There can be no better illustration of the connection between overcrowding and the typhus epidemic, than the following return of house to house visitation of the streets wherein occurred the greatest number of deaths from fever; it being understood, *firstly*, that sub-letting and consequent overcrowding is indicated by the number of families proportionate to houses; and, *secondly*, that a day inspection never accurately shows the real amount of overcrowding which exists at night:—

STREET.	No. of Street Houses.	No. of Apartments.	No. of Courts.	No. of Court Houses.	No. of Apartments in Court Houses.	No. of Population in Street Houses.	No. of Population in Court Houses.	No. of Families in Street Houses.	No. of Families in Court Houses.
St. Andrew	75	289	21	150	450	444	696	100	177
Chisenhale	63	264	30	145	433	460	806	118	225
Addison	53	175	27	111	333	540	925	120	217
Prophet	22	66	6	54	163	127	253	29	55
Russell	25	73	7	40	120	145	203	35	47
Collingwood	40	150	19	211	633	285	1341	73	332
Blackstock	16	47	8	63	191	91	458	22	136
Maguire	36	147	21	73	228	207	348	57	101
Norfolk	48	231	10	75	225	358	352	97	103
Sawney-pope	69	331	5	28	84	771	222	202	60
Combermere	52	209	17	110	326	289	513	73	115
Cavendish	41	141	18	38	114	336	205	79	57
Kew	59	224	17	83	249	505	490	138	125
Blenheim	138	494	19	118	414	854	742	225	202
Back Portland	95	293	19	42	126	599	265	148	67
Burlington	173	789	43	270	601	1272	1331	319	383
Albert	60	187	21	121	360	453	867	106	203
Naylor	53	214	12	89	277	322	503	76	143
Grenville North	54	180	14	70	208	349	493	87	111
Oriel	46	158	24	192	562	326	1071	84	289
Newsham	53	218	18	111	320	315	712	75	179
Westmoreland	42	209	13	43	142	412	233	109	67

FILTH.

Any history of the causes favouring the extension or diffusion of typhus would be incomplete which did not include the filth, foul smells, and vitiated air *within* inhabited rooms; or the noxious exhalations from open middens and heaps of decomposing vegetable and animal refuse in the immediate neighbourhood of houses. It would, indeed, be difficult to overrate the force of such auxiliary and predisponent influences, which are only second, if at all inferior, in magnitude and importance to those of either destitution or overcrowding. I believe that in Liverpool we shall never find destitution without filth, though there will be many examples of filth without destitution; hence neglect of personal and home cleanliness may, though I can offer no evidence of the fact, be supposed to have been greater during the period of the fever than in the comparatively prosperous years 1859 and 1860. But, if so, its excess must be rather considered as one of the modes in which the baneful action of indigence is manifested, than as itself an independent or concurrent cause of epidemic diseases. With regard to out-door or external nuisances, I can speak with more knowledge and greater experience. They have within the

last year been much abated. The appointment of a sub-committee to visit periodically the courts and inferior streets of the borough, the constant vigilance of a staff of inspectors, and the resolution of the Health Committee to order the conversion into water-closets of all privies and middens situate within houses, beneath rooms, or in other situations prejudicial to health, has produced a manifest and beneficial melioration of this kind of sanitary evil ; so much so, as to nullify, or reduce to a minimum, its influence in the causation of *epidemic* typhus.

DRUNKENNESS.

Intemperance among the poor is at once a cause and a result of destitution. It inflicts on the helpless family of the drunkard the deplorable sufferings of abject poverty and want. Then there rises up to them a greater evil ; for by the debility of starvation, and the nervous exhaustion of misery, are engendered the insatiable craving and thirst for the stimulus of ardent spirits. The unhappy wretches, oblivious of the primary cause of their distress, eagerly snatch a temporary relief in intoxication ; and, too frequently, the whole family acquires the vice of the parent. In the above is illustrated one phase of the connexion which ever exists between morals and the material condition of the people ; and it will be only necessary to extend its application—from individuals to communities—from the effects of personal misdeeds to the results of unavoidable misfortune—to understand why, as a rule, intoxication is found to increase in times of public or commercial distress. It was, as indeed might have been expected, much augmented during the fever period ; but it is indispensable in estimating its effects on the causation of epidemic disease, not only to analyse the extent of its prevalence in previous years, but also to give due weight to the influence exercised on its growth by the altered physical circumstances of the people, lest what may only have been an accompanying result be wrongly regarded as a chief agent.

The valuable and interesting statistics of crime, compiled by Major Greig, enable me to give the following comparative statement of the cases of drunkenness, or drunk and disorderly, summarily determined before the magistrates during the last eight years ; to which I have added the equivalent rate per 1,000 of the inhabitants :—

Year.	Summarily determined.	Rate per 1000 of Inhabitants.
1857.....	11,439.....	27·5
1858.....	9,820.....	23·2
1859.....	11,037.....	25·7
1860.....	10,963.....	25·1
1861.....	9,832.....	22·1

Year.	Summarily determined.	ate per 1000 of Inhabitants.
1862.....	12,076.....	26·7
1863.....	13,914.....	30·3
1864.....	14,002.....	30·0

It would thus appear that the year 1857—one of those recurrent periods of commercial panic, when, almost with the regularity of natural law, monetary difficulties arrest the enterprise of the merchant and interfere with the employment of the labouring population—showed, by the records of the Police Court, a larger amount of intemperance than any other until 1863 and 1864, the second and third years of the typhus epidemic. As the habit of intoxication is one which increases rather than diminishes both in individuals and communities, it is not unreasonable to believe that its excess in 1857, as compared with 1858, was due in part to those physical and moral causes—sickness, anxiety, and weakness—which always accompany distress and want. Another feature of the vice, which Archdeacon Paley terms *convivial intemperance*, will also be less prominent in times of grief and hardship than in those of prosperity; and this surplus, whatever may be its amount, must be considered in the calculation of the effects of want in augmenting the number of the victims of drunkenness.

Turning to 1861 we find that there then appeared no symptoms of any excess having preceded the epidemic; for the number of drunkards was, both absolutely and relatively to the population, less than in any of the eight years. In reference to this gratifying fact it must, however, be noted that Major Greig's annual statistics always terminate in September; so that 1861 does not include those latter months when the loss of the cotton imports began to be most severely felt. This depression of trade is reflected in the criminal statistics of 1862. It is, however, I imagine, impossible to conceive that immoral habitudes, apart from the necessities which then sorely oppressed the labourers' class, could have been so suddenly developed as to augment, by an increase of upwards of a thousand, the cases of drunkenness, and bring their pro-rata amount to within little less than a fraction of what it was during the panic year of 1857. On the contrary, if it be logical to consider similar effects when following a similar cause as pointing to one dominant influence, there can be no hesitation in assuming that *much of the excess* of intemperance in 1862, and, with equal reason, also in 1863 and 1864, was due to the depression of trade, and to its moral and physical concomitants—anxiety, idleness, and destitution. Nevertheless, the vice itself, by the principle of retributive punishment, which, among communities ever attends the breach of moral law, would, both by its own effects and by swelling the numbers of the indigent,

largely increase the extent of the epidemic. There are no documents by which to calculate how far, as we know to have been the case in cholera, the nervous depression following intoxication also added to the fatality of the disease ; but medical science assumes, in the abstract, that it must do so ; while the testimony of all who labour in charity among the poor agree that the families of the drunkard were always those where destitution and sickness were found in their most unmitigated intensity.

Exception will, probably, be taken *in liminē*, to mere criminal statistics as a test of the magnitude of what is frequently, if not a secret vice, at least one confined to the knowledge of private households. It will be said that police returns can give no adequate idea of the extent of that muddled half-consciousness which just leaves to the habitual toper sufficient wit to walk uninjured from the spirit-vaults to his own home ; nor of the prevalence of that constancy of nipping and dram-drinking which characterises the ebriety of women. Yet in a sanitary point of view, and in judging of the causation of epidemic disease, it may be justly added that these cases are as worthy of consideration as those which lead to civil offences, and that without a knowledge of their bearing and extent, it will be impossible to arrive with perfect certainty at the conclusion that the artisan and labourer are free from the great crime of having, by their own vicious habits, caused the epidemic which pressed with such cruel severity on their class. If criminal statistics be refused as a basis for calculations of the comparative prevalence of drunkenness in different years, then there will only remain the personal testimony and experience of persons familiar with the inner home-life of the families of the poor. It is impossible accurately to balance such evidence ; for, unfortunately, there has been introduced into the discussion of this important social question so much of feeling as to throw the suspicion of partiality and bias over most statements. The advocates of the Permissive Bill and of total abstinence have, perhaps involuntarily, magnified the dimensions of the evil ; while the friends of unrestricted licensing, and the pleaders for an extended suffrage, have fallen into the other extreme. My own experience and observation—in themselves, I admit, of little value—induce the belief that among the well-to-do labourers and skilled mechanics a great improvement has taken place in this phase of manners and morality ; and that even the criminal statistics of drunkenness owe somewhat of their gravity to altered public opinion and consequent increased police vigilance. I think that the benefit societies, since Bolton, the Manchester mason, changed them from “free and easies” and “drinking clubs” into well-regulated associations for upholding self-reliant independence, and guarding the enfeebled workman from the misery of pau-

perism, have, among other good results, produced, year by year, an increasing habit of order, frugality, and temperance among the people. The Lancashire workman is strangely ignorant or neglectful of the simplest hygienic rules in the management of his house, and hence the *overcrowding*; wonderfully indifferent to those finer sentiments of sexual propriety which belong to the manners of the educated, and hence the *bad arrangement of families*; but in self-reliance and all that conduce to that noble virtue—in steadiness and energy—he is not behind his fellows in any part of the kingdom.

ANALYSIS OF DEATHS FROM TYPHUS DURING ONE WEEK.

On Thursday, the 29th December, 1864, the Health Committee instructed the Town Clerk to appoint a competent person to inquire into the circumstances of patients who had died of fever during the week ending the 17th December. This report was, on the 5th January, 1865, referred to the Medical Officer of Health. It is restricted to persons dying in their own houses, as the condition of those who were removed to the workhouses was supposed to have been indicated by their being recipients of parochial assistance. I subjoin an analysis of the inquiry; the description and remarks placed between quotations being the words of the reporter.

In seven of the cases, drunkenness existed as a cause of indigence.

First Death.—An office clerk. He had a wife and four children, and earned 20s. a week. “The wife supposed to take drink.” “The house dirty and poorly furnished.”

Second Death.—A carter. He had a wife and one child, and earned on an average 20s. a week. His wife “addicted to drink heavily.” Of the house, it is added—“Poverty and filth in the extreme.”

Third Death.—A labourer’s child. The labourer’s family consisted of wife and five children, and he earns 3s. a day occasionally. “A steady man, with a drunken wife.” “The house having every appearance of misery and filth of the lowest order.”

Fourth Death.—A labourer’s child. “The parents have left the house. They were comfortably off as regards money.” “Continual drunkenness, and filthy in habits.”

Fifth Death.—A shipwright. “Irregular habits, and had been out of work for seven weeks before illness.”

Sixth Death.—A labourer. “Irregular habits.” The reporter adds—“Thinks that indigence might have been the cause of fever.”

Seventh Death.—Wife of a porter. The family consisted of a man, wife,

and three children. No mention is made of the amount of his earnings, but the reports says—"She was a very steady woman." "The house clean and comfortable." "The father taking drink occasionally."

This last case is very interesting, as showing, in contrast with the preceding, that the drunkenness of the father, though the earner of bread, is not so conducive to the indigence of the family as the intemperance of the wife and mother.

In two of the remaining cases there was simple poverty, without any moral blame whatever.

Eighth Death.—A seamstress, aged 27. "She was a good, hard-working, steady girl." "The principal support of the family." No mention is made of the extent of her earnings, nor of the number of the family, but the Report says—"Sister and father both ill with fever." "Brother, 17 years of age, just recovered." "Present income, 6s. per week; earned by the mother." "Too proud to accept parish relief, except in the shape of medical advice and medicine."

Ninth Death.—A cotton porter's child. The family consisted of man, wife, and three children, the income 10s. 6d. per week. The Report adds—"Man and wife both steady." "Very poor, and place dirty."

In two of the remaining cases, poverty is combined with at least the appearance of dissipated habits.

Tenth Death.—A market porter's child. The family consisted of man, wife, and four children; the average earnings 12s. to 15s. a week. The Report adds—"No information respecting morals, but thinks by appearance a deal of dissipation." "Dirt and destitution in the house."

Eleventh Death.—Wife of a photographer's servant. The family consisted of man, wife, and three children; the earnings "supposed to be about 15s. per week." "The house a brothel, very dirty."

In the next two cases, the Report announces poverty, but where, there are no sufficient reasons given for its existence.

Twelfth Death.—Blacksmith's apprentice. The Report says that he earned 20s. a week, and his father 22s. 6d., yet adds—"Had to borrow money to bury his son." "Seem a striving family, but poor."

Thirteenth Death.—A cabinet maker. His wife had died of fever in August, and though he had five children, yet only two were dependent on him for support. His average wages were 20s. a week, yet both he and his wife were buried by his wife's friends, and the two sons after his death sent to the workhouse. The Report says—"This family have been very respectable, but very much reduced this last four or five years."

In one of the remaining cases no information could be obtained. In the other three the circumstances were good. One of these three was in the family of a cart-owner; the other in that of a general dyer; and the third was the child of a labourer. The family consisted of man, wife, and two children; the income 18s. a week. "The father a steady man." "The house comfortable and clean, but poor."

SMALL POX.

Small-pox, having been almost absent from the death registry during the years 1860, 1861, and 1862, accounted in 1863 for 100 deaths, and in 1864 for 482—being 369 above the corrected average of the preceding ten years. The localities and periods of its fatal prevalence, and the ages of the sufferers, are illustrated in the following tables. In the first the entries of its mortality are arranged in wards of the town in which the cases occurred, or from whence they were removed to the Workhouse:—

THE REGISTERED DEATHS FROM SMALL POX DURING 1864:—

WARDS.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Annual.
Scotland	3	18	14	53	88
Vauxhall .....	...	4	10	22	36
St. Paul's .....	...	3	12	2	17
Exchange	1	...	4	9	14
St. Ann's	3	3	9	13	28
Lime Street .....	...	1	9	6	16
Castle Street .....	...	...	...	1	1
St. Peter's .....	...	2	2	2	6
Pitt Street	1	...	...	1	2
Great George	7	8	1	2	18
Rodney Street	3	6	3	3	15
Abercromby .....	...	4	7	6	17
Unknown .....	...	4	3	3	10
Parish	18	53	74	123	268
Everton and Kirkdale	3	12	9	40	64
West Derby	2	8	8	14	32
North Toxteth	6	8	6	4	24
South Toxteth	30	30	13	10	83
Unknown .....	...	...	4	7	11
Out Townships	41	58	40	75	214
Borough	59	111	114	198	482
At 1 Year	16	37	35	55	143
From 1 to 2	8	11	18	25	62
From 2 to 5	14	23	21	37	95
Above 5	21	40	40	81	182
At all Ages	59	111	114	198	482

We thus see that during the first quarter of the year the disease prevailed with great intensity in the Toxteth and Great George's Wards. Of the thirty deaths in South Toxteth, no less than twenty-five occurred within the comparatively small block of streets bounded on the north by Hill-street, on the south by Warwick-street, on the east by Mill-street, and on the west by Grafton-street. In North Toxteth Ward it was chiefly found in the neighbourhood of Hill-street; in Great George's Ward in that of Jordan, Brick, and Bridge-water-streets. During the second quarter, it still raged in South Toxteth, where, within the block previously mentioned, it caused seventeen out of the thirty deaths; but it had also extended somewhat in the direction of Egerton and Holland-streets. In North Toxteth it spread southward to Victoria and Whitfield-streets, still, however, maintaining its former ground in the vicinity of Hill-street. But we now find that it had travelled northwards to Scotland Ward, on the opposite side of the town, and taken up a marked position in the neighbourhood of Hornby, Grenville, and Dryden-streets. These two latter streets, placed back to back, account for eight of the eighteen deaths. Everton and Kirkdale, also on the north side of the town, now register twelve deaths, as against three in the first quarter. The disease became much milder during the third quarter in the south districts of the town, the deaths in the Toxteths being only nineteen as against thirty-eight, and in Great George only one as against eight. There was not much difference in its fatality in Scotland Ward, but it spread through Ennerdale-street, in the direction of Vauxhall Ward, and through Chaucer-street towards St. Ann's Ward. During this quarter Vauxhall Ward registered ten deaths, seven of which occurred in courts in Sawneypope-street, Harrison-street, and Stockdale-street. St. Ann's Ward nine deaths, seven of which were in Comus, Gay, and Ben Jonson-streets; Lime-street Ward, in the same registration district as St. Ann's, nine deaths, as against one in the previous quarter, all in the neighbourhood of Finch-street. St. Paul's Ward, twelve deaths, the greater number of which occurred in Vauxhall-road. Abercromby Ward seven deaths, four of which were in courts in Duckinfield-street. During the fourth quarter the disease may almost be said comparatively to have left the south to assume a dreadful force in the north districts of the town. In Scotland Ward it occasioned fifty-three deaths, chiefly in the neighbourhood of Athol-street; in Vauxhall Ward twenty-two deaths, the principal position of its fatality there being near to Marybone. During this quarter, also, it appeared in great excess in Exchange Ward, belonging to the same registration district as St. Paul's Ward; and here again the greater number of deaths were in the vicinity of Marybone. In St. Ann's Ward it occasioned thirteen deaths, mostly in the

neighbourhood of Christian-street. In Everton and Kirkdale, where, during the first quarter, the disease caused three deaths, there now appears on the registry forty, the greater portion of which were in streets leading off Great Homer-street.

The streets of the Borough in which most deaths happened were :—

Wolfe	10	Milton	4	Sawneypope	3	Limekiln	2
Hornby.....	7	Adlington.....	4	Paul	3	Harrison	2
Vauxhall Road..	6	Comus	4	Midge Hall	3	Stockdale	2
Prince William	5	Duckinfield	4	Gay	3	Naylor	2
Henderson	5	St. Andrew	3	Ben Jonson ..	3	Cavendish	2
Mann	5	Ashley	3	Latimer	2	Pall Mall	2
Grenville	5	Combermere ..	3	Darwin	2	Circus	2
Holland	4	Hedley	3	Epsom	2	&c., &c., &c.	
Dryden	4	Athol.....	3	Broom	2		
Oriel	4	Scotland Road..	3	Eldon	2		

The Registrars have been kind enough during the year to make a note to all entries of small-pox deaths, whether the patients had been vaccinated.

I am aware that such a return, however carefully executed, is liable at the outset, to error ; for many parents, at least among the lower orders, will not hesitate at false statements to shield themselves from blame ; therefore the following facts must be accepted with a certain reserve. There were ninety-six cases registered as vaccinated. Of these fifteen were at one year of age or under ; ten between the ages of one and two ; thirty-two between two and five ; twelve between five and ten ; eight between ten and twenty ; eleven between twenty and thirty ; and eight above thirty.

Without entering into any discussion on the vexed question of the laws which govern the progress of variolous contagion, it may, I think, be assumed that whether from being less volatile, or sooner dissolved in a pure atmosphere, it does not radiate so rapidly among the people as scarlatina, measles, and the other exanthemata. When prevalent in one district of a town weeks, even months, may elapse before it spreads to any extent to other localities, and thus its fatality in the Toxteths gave timely warning of the necessity of vaccination, by which many lives might have been saved, and much suffering and disfigurement avoided. On the subject of vaccination, its failure in ninety-six cases, supposing the statements to be approximately correct, shows—firstly, a want of care in its employment, and secondly, the necessity of the process being repeated at stated intervals of time.

DIARRHŒA.

This disease accounted for 847 deaths, or 71 above the corrected average of the last ten years. It was, as will be seen by the following statement of its quarterly mortality, most fatal to children in earliest infancy ; most prevalent during the warm months of July, August, and September ; and most frequent in those wards of the town where typhus had been likewise predominant :—

AGES.	QUARTERS.				Annual.
	March.	June.	Sept.	Dec.	
All Ages	57	83	601	106	847
Under 1	28	60	459	67	614
From 1 to 2	13	10	71	18	112
From 2 to 5	3	2	18	3	26
WARDS.					
Scotland	10	25	147	17	199
Vauxhall	7	7	39	5	58
St. Paul's	4	2	17	3	26
Exchange	4	5	21	5	35
St. Ann's	1	7	56	2	66
Lime Street	2	1	13	1	17
Castle Street.....	..	..	..	2	2
St. Peter's.....	1	2	4	1	8
Pitt Street	1	1	9	1	12
Great George	1	1	17	4	23
Rodney Street	1	3	11	5	20
Abercromby	3	..	17	5	25
Liverpool Workhouse..	5	5	21	9	40
Union Workhouse ....	..	..	1	..	1
Everton and Kirkdale..	8	10	87	15	120
West Derby	2	1	36	8	47
North Toxteth.....	4	7	27	8	50
South Toxteth.....	3	6	76	8	95
North Hospital .....	..	..	1	1	2
South Hospital .....	..	..	1	..	1
Total	57	83	601	106	847

The average number of deaths in Liverpool from summer-diarrhœa is about 450; so that the excess of 151, equal to a fourth of the whole, must be regarded as exceptionally high; hence it becomes interesting to inquire whether there were any unusual meteorological phenomena or physical peculiarities of places and position to which it could be attributed. The most notable circumstance in this respect was the extreme dryness of the season, unaccompanied, however, by any great exaggeration of the heat of the atmosphere. There fell in the months of July and August only 3.43 inches of rain, and though the thermometer was on a few days as high as 72° and 75°, yet its mean range was only 59.7°. If we compare these facts with corresponding records of the last five years, we are struck with a result which at least seems something more than accidental, viz., that the amount of summer diarrhœa is relative to the quantity of rain-fall in the two months of July and August:—

YEARS.	1860.	1861.	1862.	1863.	1864.
Deaths in the Quarter	222	410	323	429	601
	Inches.	Inches.	Inches.	inches.	Inches.
Rain-fall in July and August	7.6	4.9	5.17	4.7	3.4
Days of Rain in July and August ..	33	38	31	33	21
Mean Temperature of Quarter	56.2	59.2	59.3	59.6	59.7
Highest Temperature in Quarter ...	74.1	75.7	69.8	74.9	75.4
Lowest Temperature in Quarter....	41.2	46.6	47.6	43.3	44.0
Mean Range of Bar. in the Quarter..	29.86	29.49	29.94	29.92	30.01

The contrast between 1860 and 1864 is very remarkable, the rain-fall being only half in quantity, while the number of deaths was nearly three times more in the latter than the former year; but even this might have been deemed fortuitous if a proportionate scale between rain-fall and infantile diarrhoea had not existed during the whole of the five years. There are many ways in which summer rain-fall may affect health. It causes the evolution of ozone, throws down and dissolves nitrogenous and other deleterious gases, clears the atmosphere of carbonaceous impurities, reduces the temperature, and equalises the electrical condition of the air, and, lastly, cleanses the streets and flushes out the sewers of the town. It is, I believe, in this last and mere mechanical way, that its chief beneficial effect is witnessed in regard to a disease so essentially pythogenic as infantile diarrhoea; if this be so, then, not only quantity, but the period of its occurrence, and the time occupied, in its fall, must be taken into consideration. Thunder showers in the latter weeks of June, or in July and August, by flushing out the sewers when their emanations are most to be dreaded, will have a more favourable effect in this manner on health than ten times the quantity of rain in September or October. This should form a very potent argument for using the water of the Mersey in the flushing of sewers, as the months when this operation is most needed on sanitary principles are those in which the quantity of water for the purpose can be least spared from the Rivington lakes.

No better illustration can be given of the connection of infantile diarrhoea with the usual physical causes of pythogenic disease—such as filth, foul emanations, and close overcrowded rooms—than the following inventory of streets wherein most deaths occurred during its summer prevalence:—

STREET.	Deaths in			STREET.	Deaths in		
	Front House	Court House	Total.		Front House	Court House	Total.
Hornby.....	4	7	11	Albert (Everton).....	5	..	5
Burlington	3	6	9	Circus	3	2	5
Dryden	4	4	8	Sawney-pope	4	1	5
Bond	3	5	8	Athol.....	5	..	5
Gerard	7	..	7	Portland	5	..	5
Wolfe (Park)	7	..	7	Ford .....	..	5	5
Scotland Road	4	3	7	Grafton (Park)	1	3	4
Albert (Park)	2	4	6	Clive (Park)	2	2	4
Bedford (Park)	6	..	6	Buckingham (Everton) ..	4	..	4
Henderson (Park)	5	1	6	Great Homer	1	3	4
Mann (Park)	3	3	6	Clare	3	1	4
Elias (Everton)	6	..	6	Gay	3	1	4
Collingwood.....	..	7	7	Vauxhall Road.....	3	1	4
Eldon	5	1	6	Boundary.....	3	1	4
Mill (Park)	5	..	5				

The variations of the barometer by indicating alterations in the weight of the

air, must also to a certain degree mark the extent of escape and diffusion of the light noxious vapours from decomposing vegetable and animal matter, in middens, refuse heaps, or drains; hence a fall of the mercury, especially in warm weather, when unaccompanied by rain, may be supposed to indicate the probability of injurious results from poisoned air. In no disease will these effects be expected to occur more sensitively than one in which the fine organization of childhood is specially attacked; and thus barometrical registries contemporaneously with the prevalence and fatality of infantile summer diarrhoea are of a certain value. In order, however, to enable us to reason with any approach to truth or probability on the measure of such an influence, other meteorological changes accompanying it must also be given, such as heat, rain-fall, force and direction of wind. But any one who has watched the course of the inconstant anemometer, or the hourly gradations of the self-registering barometer and thermometer, will understand how far short in accuracy of varying mutations is any statement of the mere daily range of these instruments. I do not even hope, therefore, that the following table will do more than add a few facts to that statistical repertory which science requires for the elucidation of the natural history of disease:—

EPIDEMIC DIARRHŒA DURING THE MONTHS OF JULY, AUGUST, AND SEPTEMBER, 1864.

Date. July.	No. of Deaths	Mean Read- ing of Barometer.	Mean Tempe- rature.	RAIN.			WIND.	
				Amount	Hours.	Days.	Daily velocity in miles.	Direction.
2	5	29.638	57.1	0.35	6.6	1	406	S.S.E.
3	4	29.670	54.7	0.06	2.7	1	667	W.N.W.
4	5	29.925	58.0				535	W.
5	8	30.080	56.6				612	W.N.W.
6	5	30.205	57.5				314	N.W.
7	6	30.213	59.8				238	W.N.W.
8		30.213	57.0				171	N.W.
9	4	30.151	59.0				180	E.N.E.
10	2	30.167	60.8				204	E.
11	8	30.207	62.0				235	E.N.E.
12	5	30.176	59.6				221	E.
13	3	30.126	61.5				197	E.
14	3	30.128	65.2				175	S.S.E. & N.W.
15	1	30.130	63.0				139	N.W.
16	6	30.139	67.0				195	S.E.
17	3	30.196	62.4				252	N.W.
18	4	30.150	62.0				180	W. & N.W.
19	6	30.164	64.0				204	W.N.W.
20	2	30.075	64.9				149	N.N.W.
21	8	29.847	62.0	0.18	5.6	1	276	S.S.E.
22	5	29.809	60.4	0.02	0.7	1	305	S. & W.
23	6	29.970	61.2				286	W.
24	9	29.852	60.8				442	S.W.
25	7	29.702	60.0	0.15	5.0	1	247	W.S.W.
26	8	29.845	57.6				336	W.N.W.
27	5	29.949	64.5				156	S.S.E.
28	1	29.772	63.3	0.07	3.0	1	391	S.S.E. & S.W.
29	0	30.013	65.4				276	W.
30	0	30.074	66.1				965	Var.
31	7	30.010	62.4	0.64	4.5	1	450	S.W.
Mean's...		30.02	612.1	1.47	30.1	7	29.4	

Date. August.	No. of Deaths	Mean Read- ing of Barometer.	Mean Tempe- rature.	RAIN.			WIND.	
				Amount	Hours.	Days.	Daily velocity in miles.	Direction.
1	13	30.003	59.6	0.06	1.0	1	672	W.
2	7	30.139	59.7	0.01	0.2	1	521	W.
3	9	30.118	61.3				120	N.W.
4	14	30.005	63.1	0.01	0.5	1	315	S.S.E. & S.W.
5	13	30.092	59.8				331	S.S.W. & W.S.W.
6	9	30.119	60.5				324	W.N.W.
7	11	29.959	63.3	0.26	3.7	1	315	S.W.
8	12	29.879	58.4	0.03	0.7	1	504	W.N.W.
9	9	29.876	56.2	0.26	3.2	1	415	W.
10	7	30.072	56.0				799	W.N.W.
11	5	30.358	56.6				226	N.W.
12	6	30.372	61.4				115	S.S.E. & N.
13	9	30.388	63.5				111	N.W.
14	7	30.476	65.4				115	N.W.
15	8	30.490	64.9				187	E.N.E.
16	6	30.318	64.2				204	S.S.E. & N.W.
17	13	30.163	56.0	0.01	0.5	1	255	E.N.E.
18	6	30.021	58.2				159	N.
19	8	29.792	53.8				180	N.W.
20	8	29.859	55.2				185	N.N.E. & N.W.
21	11	29.943	51.6	0.01	0.7	1	125	Var.
22	13	30.007	53.3				195	S.S.E.
23	9	29.956	51.8	0.04	1.0	1	247	N.N.E.
24	10	30.131	52.7				216	N. & N.W.
25	12	30.227	55.9	0.01	0.7	1	151	Var.
26	11	30.360	53.5				180	N.W.
27	7	30.284	59.9	0.01	0.8	1	240	S.S.E.
28	10	30.034	60.7	0.31	5.2	1	156	S.E.
29	9	29.998	61.3	0.17	3.7	1	173	S.S.E.
30	8	29.795	66.8				255	S.E.
31	5	29.742	57.6	0.60	3.1	1	463	W. & S.S.W.
Mean's...		30.07	58.8	1.79	25.0	14	273	
Sept.								
1	10	29.903	60.5				564	S.S.W.
2	11	29.744	59.4	0.37	5.8	1	204	S.
3	9	29.690	60.9	0.03	0.3	1	216	S.W.
4	2	29.814	57.9	0.14	5.0	1	408	W.N.W.
5	6	29.913	57.1	0.01	0.4	1	771	W.
6	9	29.894	60.5	0.35	4.6	1	387	S.S.E.S.W.
7	7	29.929	61.0	0.02	1.9	1	214	W.N.W.
8	4	29.899	63.7	0.05	1.6	1	526	W.
9	1	29.778	60.4				886	S.S.W.
10	5	29.906	57.8	0.26	4.0	1	343	S. & S.W.
11		29.817	54.6	0.19	4.4	1	595	W.N.W.
12	6	30.015	54.1	0.02	0.9	1	401	W.N.W.
13	1	29.862	56.2	0.15	3.4	1	298	S.E.S.S.W.
14	5	29.501	54.1	0.08	2.7	1	384	S.S.E.
15	4	29.496	57.3	0.09	1.3	1	315	S.S.E.
16	4	29.290	53.9	0.33	2.3	1	247	Var.
17	3	29.407	54.9	0.02	0.7	1	247	S.S.E.
18	1	29.553	55.4	0.01	0.3	1	351	S.S.E.S.S.W.
19	5	29.735	54.2	0.14	2.4	1	439	W.
20	6	29.811	55.6	0.03	0.4	1	293	S.S.E.
21	5	29.681	57.7	0.13	1.7	1	375	S.W.
22	2	29.600	57.9	0.08	2.3	1	358	S.S.E.S.S.W.
23	4	29.915	58.3	0.01	1.6	1	399	S.W.S.W.
24	4	30.140	55.0				319	W.N.W.
25	1	30.345	56.6				101	S.S.E.
26	8	30.336	58.9				180	S.S.E. S.E.
27	5	30.288	59.2				279	S.E. E.S.E.
28	8	30.323	59.1				271	S.E. N.W.
29	5	30.230	55.0				389	W.N.W.
30		30.178	52.9				211	E.S.E.
Mean's...		29.9	57.3	2.51	48.3	21	366	

SCARLATINA.

Scarlatina was less fatal than in either 1862 or 1863. In the former year it caused 1,015, in the latter 740 deaths; while in 1864 it occasioned only 349, or 73 below the corrected average of the preceding ten years.

Its quarterly mortality was as follows:—

AGES.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
At 1 Year	14	9	10	17	50
From 1 to 2 Years..	25	11	12	21	69
From 2 to 5 Years..	33	18	43	58	152
Above 5 Years	18	12	20	28	78
Total Deaths	90	50	85	124	349

MEASLES.

During the first quarter of 1864, Measles was much in excess, and during the year accounted for 368 deaths, or 42 more than in 1863; it was, however, 54 below the corrected average of the last ten years.

Its quarterly mortality was as follows:—

AGES.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
At 1 Year	43	45	15	35	138
From 1 to 2 Years..	50	29	16	27	122
From 2 to 5 Years..	37	21	14	17	89
Above 5 Years	9	4	2	4	19
Total Deaths	139	99	47	83	368

HOOPING COUGH.—THE QUARTERLY MORTALITY.

AGES.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
At 1 Year	115	45	26	21	207
From 1 to 2 Years..	54	21	9	14	98
From 2 to 5 Years..	41	13	5	2	61
Above 5 Years	2	2	..	..	4
Total Deaths	212	81	40	37	370

OTHER ZYMOTICS.—THE QUARTERLY MORTALITY.

AGES.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
At 1 Year	52	48	106	54	260
From 1 to 2 Years..	29	26	45	20	120
From 2 to 5 Years..	22	21	22	26	92
Above 5 Years	46	37	58	67	208
Total Deaths	150	132	231	167	680

QUARTERLY REGISTRY OF DEATHS FROM ALL CAUSES.

The position occupied in the Death Registry by the various classes of disease will be at once seen by the following table of their quarterly mortality :—

DISEASES.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Diseases of Respiratory Organs	1285	553	302	831	2951
„ Variable Seat	106	114	109	105	434
Tubercular Diseases	699	535	511	559	2304
Diseases of Brain and Nervous System	437	398	350	379	1564
„ Heart and Blood Vessels	159	133	88	132	512
„ Stomach, Bowels, &c. . .	143	181	176	154	654
„ Kidneys, &c.	35	34	32	36	137
„ Uterus, &c.	36	23	29	27	115
„ Organs of Locomotion..	17	14	10	13	54
„ Skin, &c.	16	19	21	38	94
Malformations	8	7	6	6	27
Premature Birth	45	58	36	55	194
Atrophy and Debility	329	318	394	276	1317
Old Age	140	102	120	137	499
Privation, Cold, and Inquests, &c...	253	215	237	251	956
Causes not specified	41	26	39	48	154
Zymotics	1014	895	1513	1448	4870
All Causes	4743	3625	3973	4495	16836

DISEASES OF THE LUNGS.

Pulmonary diseases account for 17·3 per cent. of deaths from all causes. The most important members of this class were bronchitis and pneumonia, whose position on the registry is illustrated in the following table :—

DISEASES.		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Bronchitis.	{ below 1 year.	152	102	41	207	502
	{ from 1 to 2 "	51	22	10	45	128
	{ " 2 " 5 "	22	8	7	12	49
	{ " 5 " 40 "	91	39	16	44	190
	{ above 40 "	571	174	95	199	1039
Total.....		887	345	169	507	1908

Pneumonia	{ below 1 year.	97	64	42	128	331
	{ from 1 to 2 "	41	26	16	38	121
	{ " 2 " 5 "	17	5	4	19	45
	{ " 5 " 40 "	45	22	10	32	109
	{ above 40 "	37	29	20	14	100
Total.....		237	146	92	231	706

The extent of the mortality from bronchitis is no criterion of the prevalence of the disease; for coughs, the opprobria of our variable climate, are common to all ages, ranks, and seasons; but the symptoms of irritation and consequent secretion of the mucous membrane of the lungs, which are easily combated by

the healthy and the strong, assume a dangerous aspect in infancy when the frame is weak, the heart irritable, and the process of expectoration difficult, or in advanced age when the constitution is debilitated, the tendency of functional derangement great, and the organs of the circulation impaired. Hence we find that it numbered 502 victims within the first, and 128 within the second year of their age, and then passing lightly over youth, adolescence and the prime of manhood, appeared in extreme fatality in the ages above forty, during which it accounted for 1,039 deaths.

The most fatal cases of pneumonia are registered as occurring in the first and second years of life; but our statistics of this disease are, in my mind, doubtful, or at least open to the suspicion of inaccuracy; for the pulmonary congestion which invariably attends death beginning at the heart or lungs, though only the symptom and accompaniment of approaching dissolution is, in the instance of infants, too frequently characterised as an inflammatory and specific disease.

The quarterly mortality of lung diseases shows the influence exercised by the inclemency of the winter months, when the general death rate was, by their numerical superiority, raised very much above that of other periods of the year, although summer diarrhoea, and, in the autumn, epidemic typhus, had been exceptionally fatal and swelled the list of deaths to an unusual extent. During the first thirteen weeks of the year the registered deaths, from all causes, were 4,743, or 749 above the average corrected for population of the corresponding periods of the preceding Decennary. The injurious power of extreme cold, of sudden variations of temperature, and of persistent east and south-east winds, was then very manifest, especially in the case of pulmonary diseases, which account for 1,265, or upwards of a fourth of the whole. This excess was not singular; for if we analyse the following table of the death registries during the same weeks of the ten years from 1854, we find—firstly, that as the mean temperature of the air was low, so the deaths from lung diseases became more numerous; and, secondly, that there existed between these conditions a remarkable parallelism:—

YEARS.	1855.	1856.	1857.	1858.	1859.	1860.	1861.*	1862.	1863.	1864.
Mean Temperature	37.06	41.99	41.67	40.1	45.2	39.9	41.0	42.22	44.5	38.8
Deaths from all Causes	3480	3145	3024	3699	3264	3274	3567	3556	3640	4743
Deaths from lung diseases	1009	694	700	827	670	884	1017	799	726	1265
Percent. rate of lung diseases to all causes of death....	28.9	22.0	23.1	22.1	20.5	27.0	28.7	22.4	19.9	26.6

* In 1861, the mean range of temperature during January was, as compared with the same period of 1860, 35.5 to 41.2; and it was during those weeks of great cold that 480 people died from pulmonary complaints, raising thereby the mortality of the quarter above that of 1860.

But, in order to judge with accuracy the extent of atmospheric influences on the health of the people, we must institute comparisons between the death registry and the meteorological tables over shorter and more defined intervals of time; for the mean range of a thermometer for a quarter of a year gives no adequate idea of the occasional intensity or sudden mutations of climate, nor does a bald enumeration of deaths during the same dates pourtray the connection which may exist between such results. It was, therefore, with the desire to test whether a daily record of deaths placed in juxtaposition with a daily reading of meteorological phenomena, would give to our more generalized conclusions the force of positive evidence, that I prepared the following diary of mortality for the month of January, 1864:—

Date.	Diseases.				Sex.		Ages.					Temperature.			Mean Reading of Barometer.	Rain Fall.	Velocity in Miles.	Wind.	
	Total Deaths.	Zymotics.	Pulmonary.	Phthisis.	Other Diseases.	Male.	Female.	At One Year.	One to Two.	Two to Five.	Five to Fifteen.	Fifteen to Fifty.	Above Fifty.	Highest.				Lowest.	Mean.	Direction.
1 39	9	8	1	21	20	19	14	3	1	3	8	10	36.4	28.0	32.2	30.092	0.00	279	E E S E
2 35	9	6	4	16	22	13	9	4	2	2	9	9	35.1	27.6	31.3	30.542	0.00	238	S E S E S E
3 49	6	13	8	22	24	25	15	3	3	..	18	10	35.4	24.2	29.8	30.662	0.00	219	E S E
4 58	15	9	7	27	31	27	13	8	4	3	21	9	31.3	24.7	29.4	38.664	0.00	216	E S S E
5 55	14	7	8	26	26	29	20	4	5	3	14	9	31.5	24.8	28.2	30.446	0.00	139	E E S E
6 61	17	16	6	22	31	30	15	4	8	1	23	10	30.2	16.9	23.6	30.294	0.00	127	Var. S S E
7 55	4	18	11	22	31	24	14	7	4	1	19	10	29.5	19.2	24.4	30.277	0.00	110	S E
8 87	13	32	12	30	47	40	17	13	5	5	29	18	31.3	26.5	28.9	30.076	0.00	139	E & S E
9 72	12	28	5	27	33	39	16	5	5	1	19	26	39.6	27.0	33.3	29.914	0.00	303	S E & E S E
10 75	17	26	6	26	36	39	14	9	9	..	24	19	41.9	37.9	39.9	29.954	0.00	317	E S E S E
11 57	13	9	9	26	28	29	12	7	9	1	14	14	45.0	40.0	42.5	30.020	0.00	387	S E S E S E
12 63	15	14	8	26	33	30	15	3	3	2	28	12	44.6	31.0	37.8	30.052	0.07	281	Var. S E
13 49	4	19	4	22	21	28	11	5	3	..	21	9	33.2	26.3	29.8	30.366	0.00	163	S S E
14 68	12	17	6	33	30	38	15	10	4	..	16	23	36.9	32.0	34.5	30.318	0.00	240	S E
15 73	11	26	12	24	29	44	17	4	10	..	21	21	39.5	36.0	37.8	30.210	0.00	384	S E
16 57	15	15	8	19	28	29	10	10	6	..	19	12	41.3	33.1	37.2	30.184	0.00	456	E S E
17 74	12	23	8	31	36	38	22	5	3	3	15	26	42.6	36.6	39.1	29.935	0.07	389	E S E
18 62	18	19	1	24	33	29	17	7	2	1	22	13	42.4	38.0	40.2	30.077	0.00	243	S E
19 47	10	13	3	21	27	20	11	2	3	1	18	12	46.6	40.0	43.3	30.080	0.10	312	S E S S E
20 65	9	22	6	28	35	30	17	3	4	3	24	14	46.2	36.0	41.1	30.103	0.74	221	S S E
21 62	11	23	7	21	35	27	15	7	2	2	18	18	51.5	38.0	44.8	29.851	0.00	355	S S E
22 69	16	15	14	24	37	32	17	6	4	..	28	14	53.9	43.4	48.8	29.618	0.01	521	S S S W
23 60	8	12	8	32	32	28	13	5	1	2	22	17	46.3	37.6	42.1	29.707	0.03	483	W S W
24 56	13	12	4	27	25	31	16	8	2	..	16	14	47.2	37.8	42.5	30.130	0.00	408	W S W
25 53	13	14	6	20	24	29	12	4	4	3	18	12	49.9	39.5	44.7	30.360	0.00	255	S W S S E
26 55	10	21	3	21	24	31	14	4	4	..	19	14	49.0	40.7	44.9	30.139	0.04	329	S E S S E
27 48	10	5	5	28	26	22	21	2	4	1	13	7	50.2	42.8	46.5	29.893	0.04	403	S S W S W
28 57	12	17	7	21	27	30	15	5	6	1	18	12	44.6	36.0	40.3	29.935	0.17	612	W N N W
29 46	11	12	4	19	30	16	6	9	1	1	17	12	40.8	35.2	38.0	30.381	0.00	283	Var. S E
30 48	12	11	6	19	19	29	6	4	4	..	18	16	48.2	37.6	42.9	30.311	0.00	355	S E
31 48	10	10	5	23	24	24	7	3	5	..	23	10	50.2	45.0	47.6	30.160	0.00	492	S E Var.

The thermometrical readings in the above table are from an instrument placed within the distance of a few yards of the river Mersey; so its range will be 5 or 6 degrees higher than in the more upland districts of the Borough.

The observations are taken at 9 a.m., and as the lowest temperature generally occurs in the early hours of the morning, it will be more correct to date the record in that particular on the day subsequent to which it is here registered. On the 3rd of January the thermometer fell three degrees, and the difference between the highest and lowest points being 11·2 degrees, the deaths rose from 35 to 49. The cold still continuing on the 4th, 5th, 6th, and 7th the deaths also increased, being aggravated on the 6th by a day variation of 13·3 degrees. It was on the mornings of the 7th and 8th that there passed over the city, waves of intense cold, which on the three subsequent days augmented the number of deaths successively to 87, 72, and 75. The injury then done to the sick and enfeebled was long manifest; but occasionally we also recognise the additional impress of sudden accessions of cold and extreme variations of temperature. Thus on the morning of the 14th, the lowest range having fallen from 40° and 31° on the preceding days to 26°, the deaths rose from 49 on the 13th to 68 on the 14th, and 73 on the 15th. Again on the 20th, 21st, and 22nd, the daily variations being great, the deaths rose from 47 on the 19th, successively to 65, 62, and 69.

The popular fallacy which assumes that cold weather is tonic, bracing and healthy, or the old adage which teaches that a mild winter makes a full churchyard, cannot have originated in cities where man is enfeebled by the cares, the vices, and the sanitary evils of a highly artificial civilisation, nor in the marts of commerce and manufacture, where the artisan contends for his daily bread with his fellows in an over-stocked labour market. To give such a maximeven the semblance of truth the constitution must be unimpaired, the health robust, the clothing and feeding sufficient, and the exercise commensurate; but speaking in the language of realities, and from the experience of physicians, it would be more correct to affirm that as cold is eminently fatal to the weak and impoverished, so a high mortality from this cause is an unfailing test of low vitality and of want among the people.

TUBERCULAR DISEASES.

Tubercular diseases occasioned 2,304 deaths, or 68 below the corrected average of the decennied, and they account for 13·6 per cent. of deaths from all causes, being the lowest comparative rate observed during the last ten years—a striking example of the curious circumstance illustrated in my last annual report, viz., that the bills of mortality from this class of complaints are always light in very sickly years, or when zymotics are unusually fatal. As sex and age play important parts in predisposing to these constitutional disorders, I have included them in the following table, which also shows the seasons and localities in which the diseases were most prevalent:—

QUARTERLY MORTALITY OF SCROFULA.

DEATHS.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Below 5	7	9	27	21	64
Between 5 and 10 ..	..	3	2	1	6
„ 10 and 12 ..	2	4	3	2	11
„ 20 and 40 ..	3	4	..	5	12
Above 40	1	2	1	2	6
Males	6	15	20	21	62
Females	7	7	13	10	37
Total	13	22	33	31	99
Parish	6	14	26	26	72
Out Townships	7	8	7	5	27

QUARTERLY MORTALITY OF TABES MESENTERICA.

DEATHS.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Below 5	26	25	36	41	128
Between 5 and 10 ..	1	2	2	3	8
„ 10 and 20 ..	..	..	..	1	1
„ 20 and 40 ..	..	..	1	..	1
Above 40	1	1	2	..	4
Males	16	17	21	22	76
Females	12	11	20	23	66
Total	28	28	41	45	142
Parish	20	16	21	21	78
Out Townships	8	12	20	24	64

QUARTERLY MORTALITY OF HYDROCEPHALUS.

DEATHS.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Below 5	87	86	96	81	350
Between 5 and 10 ..	5	2	3	4	14
Above 10 .....	..	..	1	..	1
Males	59	59	58	54	230
Females	33	29	42	31	135
Total	92	88	100	85	365
Parish	44	47	55	43	189
Out Townships	48	41	45	42	176

QUARTERLY MORTALITY OF PHTHISIS.

DEATHS.	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Annual.
Below 5	47	20	28	27	128
Between 5 and 10 ..	13	6	15	8	42
„ 10 and 20 ..	55	50	38	35	178
„ 20 and 40 ..	284	200	184	233	901
Above 40.....	166	116	71	96	449
Males	286	202	161	199	848
Females	279	196	175	200	850
Total	565	398	336	399	1398
Parish	348	254	218	268	1088
Out Townships	217	144	118	131	610

DEATH RATES IN DISTRICTS.

It is necessary to explain that by a resolution of the Health Committee, the following calculations are so framed as to credit deaths occurring in workhouses and public hospitals to the Wards from whence the patients were removed; and also to bring back to the Toxteths, the deaths which happening in the Smithdown-lane Workhouse were really beyond the registration boundaries of the Borough. Hence in instituting comparisons between different years, or between localities in this and other towns, allowance must be made for an alteration from the common rule of calculation;* otherwise, incorrect conclusions unfavourable to certain districts, or what is of more consequence, unfavourable to the practical advantages of sanitary science, may be formed. In determining population I have assumed that the rate of increase continues the same as between the census returns of 1851 and 1861; but though the principle is correct, there is not improbably a degree of error in applying it to those wards where the rate was one of decrease, as in Vauxhall Ward, Paul's and Exchange Wards, Castle and Peter's Wards, and Pitt and Gt. George Wards.

* It is quite true that when numbers of the sick are removed from their own homes to hospitals, a mortality rate adjusted from the register of the district never accurately portrays the co-relation of disease to death or their amount to population; for it is possible to conceive a crowded locality wherein there shall be much fatal disease, and yet the mortality appear low from the fact of many of the cases having eventually died in the hospital. This error, however, to a certain extent belongs alike to all the poorer subdivisions of parishes and unions throughout the kingdom; but it is not improbable that the carrying out of parochial relief on certain fixed and defined principles has so equalised its statistical import as practically to render it of little consequence in comparing death-rates of different and distant places inhabited by persons of the same class. Then if the death-rate of low neighbourhoods is lessened by removals to hospitals, that of the more respectable is so by removals to the country or the seaside, or wherever the caprice of sickness or the science of hygiene may suggest. Here, again, the great principle of averages, ruled by the similar tastes, feelings, and positions of the same rank throughout the country, brings to a tolerable equality in the scale of comparison the position of the middle and upper classes of all towns, and by that means gives a tolerable accuracy to comparative estimates of sickness between the same places in different years, or between similarly inhabited places of distant towns.

In the instance of contagious diseases, where the object is to localise sanitary defects, or to detect the localities where miasm prevails or was engendered, it may serve a good purpose to bring back to wards or districts deaths accruing in hospitals or workhouses. The same may, if possible, be also done in cases of acute disease which (a very unfrequent occurrence) have only been in hospital for a few days; but it certainly

WARDS.	Number of Deaths occurring in the Ward.	NUMBER OF DEATHS FROM THE WARDS OCCURRING IN THE							Total Deaths.	Population Census 1851.	Population Census 1861.	Death rate per thousand 1864.
		L'pool Work-house.	Union Work-house.	Toxteth Work-house.	Royal Infirmary.	North Hospital.	South Hospital.	Lying In Hospital.				
Scotland.....	2745	443	..	..	11	32	2	1	3,234	61,777	81,228	36.6
Vauxhall	925	170	..	..	2	20	1	:	1,118	27,942	24,816	46.6
St. Paul's	491	73	..	..	2	6	2	..	574	31,763	29,078	43.5
Exchange	506	147	..	..	2	3	..	..	658	40,977	41,241	42.3
St. Ann's	910	226	..	..	7	1	2	..	1,146	19,825	29,142	39.6
Lime Street	479	116	..	..	9	1	..	..	605	41,997	47,410	24.9
Castle Street.....	166	54	..	..	2	3	..	1	226	33,957	..	..
St. Peter's	214	27	..	..	5	2	7	..	255	..	..	..
Pitt Street.....	303	81	..	..	6	1	10	..	401	..	..	..
Great George	562	121	..	1	3	..	15	1	703	..	..	..
Rodney	500	67	1	..	8	1	1	1	579	..	..	..
Abercromby	531	108	..	..	9	..	..	..	648	..	..	..
L'pool W'house & Vagrant Ward..	2009	230	..	..	..	..	..	..	..	..	..	..
Union ditto	298	..	10	..	..	..	..	..	..	..	..	..
Everton and Kirkdale.....	2395	..	118	..	15	10	1	..	2,539	35,776	70,983	22.0
West Derby	982	..	121	..	23	..	1	1	1,128	22,002	36,527	26.5
North Toxteth	1042	..	..	72	8	6	18	..	1,146	59,941	66,686	38.3
South ditto	1326	..	..	149	..	..	22	..	1,497	..	..	..
Unknown .....	..	146	48	13	67	48	19	1	..	..	..	..
Northern Hospital	134	..	..	..	..	..	..	..	..	..	..	..
Southern ditto	101	..	..	..	..	..	..	..	..	..	..	..
Everton ditto	28	..	..	..	..	..	..	..	..	..	..	..
Lying In ditto	10	..	..	..	..	..	..	4	..	..	..	..
Royal Infirmary	179	..	..	..	..	..	..	..	..	..	..	..
	16,836	2,009	298	235	179	134	101	10	..	..	..	..

METEOROLOGICAL TABLE.

The following meteorological table, for which I am indebted to Mr. Hartnup, shows the mean monthly reading of the barometer and thermometer in 1864, and the average mean monthly temperature for the last eighteen years:—

1864.	Mean Reading of Barometer.	Mean Temperature.	Average Temperature for 18 years.
	Inches.	Degrees.	Degrees.
January	30.153	37.2	40.0
February	29.953	38.1	41.8
March.....	29.679	41.5	43.8
April	30.081	49.4	48.0
May	30.023	56.1	54.1
June	29.921	58.1	60.0
July	30.017	61.7	62.6
August	30.096	59.5	62.0
September	29.870	57.9	57.8
October	29.876	51.6	52.2
November	29.750	45.1	45.0
December	30.014	41.0	42.3

REPORT ON THE PREVENTION OF CONTAGION MADE TO THE HEALTH COMMITTEE, MARCH 24, 1864.

THE Medical Officer of Health begs to call the attention of the Committee to the important subject of Disinfection in cases of Zymotic Diseases. By the

puts the poorer wards at great disadvantage, if in their list of deaths are included those chronic cases which die after months of residence in the workhouse. Therefore, not only for the facility of instituting comparisons, but also for accuracy of statistical results, it seems the better plan to calculate the death rate, simpliciter, from the register returns without any reference to the previous history of the patients, because also—

1st. It being impossible to do so in the instance of the rich man who dies at Nice, or elsewhere, from a consumption or a bronchitis caught during his residence at his own house at home, it is manifestly unfair to credit Vauxhall Ward with a pauper's death, because some months, it may be a year, before, he was removed thence to the workhouse.

2nd. Death rate of places inhabited by labourers and artisans are always, compared with more opulent neighbourhoods, increased by the circumstance that an extraneous population are ever pressing in to fill the vacuum occasioned by removal or death, so that the same domicile may, within the twelve months, contain a succession of four families, and really represent the accidents, diseases, and deaths of twenty-four persons, instead of the six which the census gives, as the population of each house; and three of those families may have added their quota to the death registry during the period the pauper patient has been in hospital. It is indeed this circumstance of a constant succession of claimants for occupation, which, among many other causes, places such commercial towns as Glasgow and Liverpool at great disadvantage to inland towns, or even to the west end of London, in the comparison of death-rates; for in the former, families generally leave and give place to other candidates for work when death has removed the tie of business; while in the latter, the residents are either stationary, or in the metropolis keep their houses unoccupied till the returning parliamentary session.

3rd. In wards which are central and near the marts of labour, the pressure of extraneous population will be greatest; yet it is from these localities that the removals to hospitals and workhouses chiefly take place.

I subjoin death-rates calculated from the returns on the registers of the separate districts:—

Scotland Ward	31.1 in the 1,000.	Pitt St. & Gt George Wards...	31.0 in the 1,000.
Vauxhall Ward	38.6 " "	Rodney & Abercromby W'ds..	20.9 " "
Paul's and Exchange Wards ..	35.2 " "	Everton & Kirkdale Wards..	27.4 " "
St. Ann's & Lime St. Wards ..	33.6 " "	West Derby Ward	23.0 " "
Castle Street & Peter's Wards..	23.7 " "	Toxteth Wards	34.3 " "

123rd section of the Sanitary Act, the Council are empowered to order the whitewashing, cleansing, and purifying of any houses or adjoining premises which are in such a filthy and unwholesome condition as to endanger the public health. This salutary regulation is systematically enforced with excellent effect; but, notwithstanding every care on the part of the authorities, there is constant evidence that contagious diseases cling to families, and thereby spread to otherwise healthy localities. The cause of this is partly due to the well-known fact that the miasm is retained by such fomites as furniture, beds, bedding, and curtains of the sick room, and the clothes of patients and their attendants. The remedy of this evil is to a certain extent in the power of any cleanly and careful housewife, for the physician always directs the preventive means to be adopted in cases of Small-pox, Diphtheria, Scarlatina, Typhus and Puerperal Fever. The clothes having been placed in a solution of chloride of lime, or chloride of soda, in cold water for some hours, and afterwards subjected to the heat of boiling water for a certain period, are carefully washed in a dolly tub; then re-soaked in cold water, pressed, dried by direct heat or heated air, and afterwards exposed freely to the atmosphere. These means are sufficient and effectual. The Council have, in the Paul-street establishment, considerably apportioned a separate and distinct wash-house, where the poor, and those living in crowded, close, and squalid precincts, can obtain at the smallest cost, or even gratuitously, all the necessary means for purifying infected clothes. The same conveniences, but to a very insufficient extent, also exist in Frederick-street.

But granting that purification of clothes by chloride of lime and washing with boiling water is within the reach of all, there still remain the flock and feather beds, pillows, hair mattresses, curtains, and woollen clothes, too valuable to be destroyed, but which cannot be subjected to this process. The consequence is that these fomites are continued in use by families. The clothes which were worn during the incubation and early periods of disease are, after the death or convalescence of patients, again brought into requisition, and by that means contagion is extended to the healthy. In the instance of children returning to their school companions and playfellows in the same clothes in which they were attacked by scarlet fever and diphtheria, this is a fruitful source of propagated sickness. The same bed saturated with the fatal poison of contagion is slept in by other members of the family, and in too many cases the whole furniture of a sick room is, after the death of a patient, hurriedly hastened to the auctioneer, spreading thereby disease among the inconsiderate and unwary purchasers of such second-hand articles. *The Times* called attention last year to the fact that, from a most unpardonable neglect of proper purification, diphtheria, scarlatina, and typhus were caught by visitors to the lodging-house of fashionable

spas and bathing places lately occupied by convalescents from those diseases. If such neglect of sanitary precautions is found to prevail in the residences of those who, from education and social position, ought to be well acquainted with the risk incurred, it may readily be believed that few or none of the labouring classes adopt any steps for insuring safety from the fomites of contagion. Yet the means are simple and well known to science. In 1831, the celebrated chemist and physician, Dr. William Henry, of Manchester, was induced at the request of Mr. Garnett, to institute experiments for the purpose of discovering some means of so purifying Egyptian cotton as to guard against the introduction of the plague into this country by means of that material, without incurring the serious commercial sacrifices which then attended the enforcement of the quarantine laws. It was a vain hope to expect that science or truth could ever succeed in relaxing or abrogating an oppressive code of regulations based on, and supported by, the selfish interests of Italian governments and their custom-house officials; but his labour, though so far unsuccessful, conferred indirectly an inestimable benefit on mankind, by showing—1st. That it was consistent with chemical reasoning to believe that the subtle poisons which propagate contagious distempers, being the products of organic life and of morbid conditions of the animal body, are of a complex nature, and owe their existence to affinities, which are nicely balanced and easily disturbed, and that they will lose their original properties and acquire new ones when exposed to temperatures of no great amount. 2nd. By proving that vaccine lymph and the fomites of typhus and scarlatina are rendered innocuous after being subjected for a few hours to a temperature of 204° Fahrenheit. The doctor invented and described a simple apparatus for disinfection in which steam is used as the source of heat; and keeping in view the original purpose of his experiments, suggested that at every seaport to which ships may be bound with unclean bills of health, some apparatus of the kind should be provided on a scale sufficient for the emergency.

Shortly after the publication of Dr. Henry's papers in the *Philosophical Magazine*, the Liverpool Town Council erected such an apparatus at the Borough Gaol. It has since, Dr. Archer informs me, been in constant use with the very best practical results. Its ordinary working is to 210° Fahrenheit, equal to eight lbs. pressure on the square inch, but it is capable of being raised to nine or ten lbs. without danger. Such a range of temperature is sufficient for all purposes of disinfection, and to the constant use of such an apparatus may be reasonably attributed much of the cleanliness and freedom from disease which has so favourably characterised that well-managed prison.

As all feather dealers have, for the purposes of their trade, a large room heated by steam, the rich are able easily to secure purification of infected beds,

mattresses, trunks, clothes, &c.; but as the cost is far beyond the means of the artisan, the Medical Officer of Health ventures respectfully to suggest to the Committee the desirableness of providing public disinfecting apparatus on a scale sufficient to meet the requirements of the humbler classes of the community. In fact, that what Dr. Henry suggested for the convenience of commerce may be advantageously adopted for the benefit of the general public. The Medical Officer observes the readiness with which the poor have availed themselves of the great boon of wash-houses, and feels certain that if they had the opportunity of purifying their bedding and clothes at a similar small cost, the favour would be received with equal gratitude and alacrity. It would cost very little to supplement Dr. Henry's process by the addition of a dry air-tight room, in which, in the cases of very virulent contagions, all the woollen clothes could be subjected for a certain time to dry chlorine gas, evolved with proper precautions from common salt by black oxide of manganese and sulphuric acid, or to chlorine gas, gradually evolved from chloride of lime.

One of Henry's apparatuses should also be attached to every Fever Hospital, so that convalescent patients, on resuming their own clothes, may not carry back to their homes the fomites of contagion. The Medical Officer of Health feels that in bringing this subject before the notice of the Committee he may be supposed to ask from the Council an interference with what should belong to the exertions of private charity and private enterprise.

LODGING HOUSES.

The number of inspections made during the year to registered houses were 44,258, to unregistered 1,357; giving a total of 45,615, of which 35,474 were during the day and 10,141 in the night. The different matters connected with the working of the Lodging House Department will be best shown in the following tables:—

LODGING-HOUSES.

REGISTRATIONS AND INSPECTIONS.

Nightly Visits. Houses Examined.	Number of Per- sons belonging to the Family and Registered and belonging to the House.	Number of Per- sons belonging to the Family and found on Nightly Visits.	Difference be- tween the Num- ber Registered and Number found on Nightly Visits.	Number of Lod- gers allowed by the Medical Officer of Health.	Number of Lod- gers found on Nightly Visits.	Below the Number Regis- tered.	Number of Houses found overcrowded on Nightly Visits.	Number of Lod- gers found above the Num- ber allowed in the 44 houses on Nightly Visits.	Number of Unregistered Houses Visited during the Night.
10141	42172	38737	3435	89182	46663	46183	44	229	367

Number on the Register, Dec. 31st, 1863.	No. of Houses Registered during the Year.	Removed from the Register.	No. on the Register Dec. 31, 1864.	Inspections of Registered Houses.		Inspections of Unregistered Houses.		Total Inspections.	Number of Fever Cases in Registered Houses during the Year.	Deaths from Fever.	Total Deaths in Registered Houses during the Year, including the Fever Cases.
				Day.	Night.	Day.	Night.					Total.
1118	382	271	1209	34484	9774	44258	990	367	1357	4	78

NOTICES AND INSPECTIONS.

INFORMATIONS FOR													Results of Informations.			
Notices to Register.	Notices to Limewash Tickets.	Notices to apply for Tickets.	Mixing Sexes.	Not Registering.	Not exhibiting Ticket.	Not applying fortickets.	Overcrowding.	Not washing Floors.	Not sweeping Floors.	Not Lime-washing. admitnce.	Refusing admitnce. swine	Keep- ing swine	Total.	With- drawn.	Fined.	Acquit- ted.
338	402	305	14	22	7	6	44	20	28	8	1	1	151	24	104	23
AMOUNT OF FINES.																
No. at 1s.—1s.	No. at 2s. 6d.	No. at 2s. 6d.—1s.	No. at 2s. 6d.—2s. 6d	No. at 5s.—4s. 6d.	No. at 10s.—4s. 6d.	No. at 20s.—4s. 6d.	No. at 25s.—4s. 6d.	No. at £5.—4s. 6d.	Total Amount.	Total fined	Withdrawn & Acquitted.	No. of houses sketched and measured.				
15	10	1	27	25	17	7	1	1	£45 15 6	104	47	924				

DEATHS REGISTERED IN LIVERPOOL,
DURING THE YEAR ENDING SATURDAY, 31st DECEMBER, 1864.

[illegible]

